CODE NO. FTD85015050C2

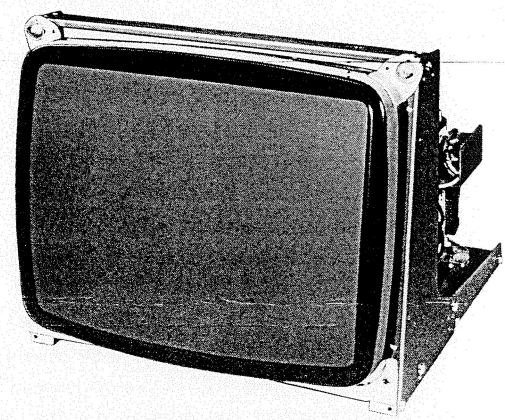
Service Manual

Color CRT Data Display

MODEL TX-1425FHB

MODEL TX-1425FHD

Chassis No. X25H



CONTENTS

Panasonic®

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

SAFETY PRECAUTIONS

1-1 CAUTION:

No modification of any circuit should be attempted. Service work should only be performed after you are thoroughly familiar with all of the following safety checks and servicing guide lines.

1-2 SAFETY CHECK

Care should be taken while servicing this CRT display because of the high voltage used in the deflection circuits. These voltages are exposed in such areas as the associated flyback and yoke circuits.

1-3 FIRE & SHOCK HAZARD

1-3-1 Insert an isolation transformer between the CRT display and AC power line before servicing chassis.

1-3-2 In servicing pay attention to original lead dress especially in the high voltage circuit. If a short circuit is found, replace all parts which have been overheated as a result the short circuit.

1-3-3 All the protective devices must be reinstalled per original design.

1-3-4 Soldering must be inspected possible for cold solder joints, frayed leads, damaged insulation, solder splashes or sharp solder points. Be certain to remove all foreign material.

1-4 LEAKAGE CURRENT COLD 'CHECK (AC power supply model only)

1-4-1 Unplug the AC cord and connect a jumper between the two prongs on the plug.

1-4-2 Turn the CRT display power switch on.

1-4-3 Measure the resistance value with an ohmmeter between the jumpered AC plug and each exposed metallic part on the CRT display such as metal frame screwhead, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be 1.8 megohm minimum.

1-5 LEAKAGE CURRENT HOT CHECK (AC power supply model only)

1-5-1 Plug the AC cord directly into the AC outlet. Do not use an isolation transformer during this check.

1-5-2 Connect a 1500 ohm, 10 watt resistor, paralleled by a 0.15μF capacitor between each exposed metallic part and good earth ground.

1-5-3 Use an AC voltmeter with 1000 ohm/volt or more sensitivity and measure the AC voltage across the combination 1500 ohm resistor and 0.15μF capacitor.

1-5-4 Move the resistor connection to each exposed metallic part and measure the voltage.

1-5-5 Reverse the polarity of the AC plug in the AC outlet and repeat the above measurement.

1-5-6 Voltage measured must not exceed 7.5 volt RMS, from any exposed metallic part to ground. A leakage current tester may be used in the above hot check, in which case any current measured must not exceed 5.0milliamp. In the case of a measurement exceeding the 5.0 milliamp value a rework is required to eliminate the chance of a shock hazard.

Note: High voltage is present when this CRT display is operating. Always discharge the anode of the picture tube to the display monitor chassis to prevent shock hazard.

1-6 IMPLOSION PROTECTION

All Panasonic picture tubes are equipped with an integral implosion protection system, but care should be taken to avoid damage and scratching during installation. Use only Panasonic replacement picture tubes.

1-7 X-RADIATION

WARNING: The only potential source of X-Radiation is the picture tube. However when the high voltage circuitry is operating properly there is no possibility of X-Radiation problem. The basic precaution which must be exercised is to keep the high voltage at the following factory-recommended level.

Note: It is important to use an accurate periodically calibrated high voltage meter.

1-7-1 To measure the high voltage, use a high impedance high voltage meter, connect (−) to the external conductive coating (aquadag) of CRT and (+) to the CRT anode button.

1-7-2 Turn the Brightness control fully counterclockwise.

1-7-3 Measure the high Voltage. The high voltage meter should indicate at the following factory- recommended level.

1-7-4 If the upper meter indication exceeds the maximum level, immediate service is required to prevent the possibility of premature component failure.

1-7-5 To prevent X-Radiation possibility, it is essential to use the specified picture tube.

1-7-6 The nominal high voltage is 24kV and must not exceed 26kV at zero beam current at rated voltage.

IMPORTANT SAFETY NOTICE

There are special components used in this CRT Display which are important for safety.
These parts are identified by the international symbol ⚠ on the schematic diagram and on the replacement parts list. It is essential that these critical parts should be replaced with manufacture's specified parts to prevent X-RADIATION, shock, fire or other hazards.
Do not modify the original design without written permission of the Matsushita Electric or this will void the original parts and labor guarantee.

GENERAL INFORMATION

- Here is an outline of Models TX-1425FHB and TX-1425FHD.
- This model is COLOR CRT DISPLAY of metal frame type.
- TX-1425FHB and TX-1425FHD uses High Resolution (Dot pitch 0.31mm) R.G.B. short persistence Color Cathode Ray Tube.
- TX-1425FHB can display up to 16 colors including black.
- TX-1425FHD can display up to 64 colors including black.
- Input signal is separate type and each input signal is put through 20-Pin connector on the P.C. Board.
- Switching regulator power supply accepts very wide range of AC mains voltage.

NOTE :

- The AC input selector of these unit is set to AC 220V side when shipping from factory. When using in AC 90 ~ 140V area, change the select switch of the power supply to AC 115V side by loosing two screw again.

COLOR DISPLAY SPECIFICATIONS

1. MECHANICAL DESCRIPTION

Dimension:

Height:	287 mm (11.3") max.
Width:	346 mm (13.62") max.
Depth:	370 mm (14.57") max.
Weight:	12 kg (26.5 lbs)
Picture Tube:	370MYB22N
Size	13"
Gun	In-Line
Def, Angle	90°
Neck dia	29 mm (1.145")
Phosphor	R, G, B
Tilt:	10°

2. ENVIRONMENT

Ambient temp, Humidity and Altitude:

Operating:

Temp:	0° ~ 50°C (32°F ~ 122°F)
Humidity:	5 ~ 90%
Altitude:	3,000 m max. (10,000 ft)

Non-operating:

Temp:	−40 ~ 65°C (−40°F ~ 149°F)
Humidity:	5 ~ 90%
Altitude:	12,000 m max. (40,000 ft)

Storage and Shipment:

Temp:	−40 ~ 65°C (−40°F ~ 149°F)
Humidity:	5 ~ 90%
Altitude:	12,000 m max. (40,000 ft)

Vibration and Shock: (Packaged condition)

Vibration:

Frequency:	5 ~ 55 Hz
Vertical:	1.25G
Horizontal:	0.75G

Shock:

Corner and edge:	40 cm (15.8")
Front, Back, Side, Bottom:	50 cm (19.7")

3. ELECTRIC PERFORMANCE

Power supply:

Input Voltage:	AC 90 ~ 140V AC AC 180 ~ 264V AC
Input Frequency:	50/60 Hz
Input Current:	1A max. (at 115V AC)
Power:	70 W

Input Signals:

Horizontal Sync:

Polarity:	Negative
Signal Level:	4Vpp ± 1V
Input Imp.:	≧ 1.5K ohms

Vertical Sync:

Polarity:	Negative
Signal Level:	4Vpp ± 1V
Input Imp.:	≧ 1.0K ohms

Video Signal (R.G.B)

Polarity:	Positive
Signal Level:	4Vpp
Tr, Tf:	≦ 10 ns

Note 1. Max rise and fall times (from 10% to 90%) of input signals are less than 10 ns.

Image test Condition:

Character:	"H"
Color:	Green
Brightness:	Max. (without Background)
View Direction:	Parallel to the CRT axis
Ambient Temperature:	Room Temperature
Supply Voltage:	AC 115V

Note 2. Measure more than 20 minutes after power on.

Note 3. Normal condition is the condition that satisfies image test condition. (Condition of following item is normal condition, if not mentioned).

Video Out:

Turn Rise Time (Tr):	Less than 15 ns
Turn Fall Time (Tf):	Less than 15 ns

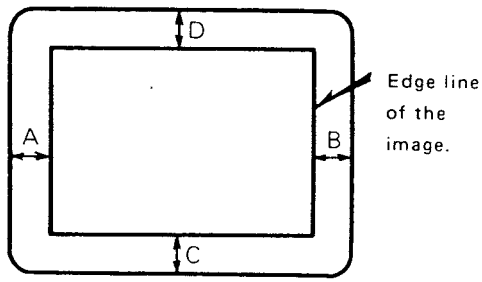
(Measured with 10 MHz square-wave, Duty 50%)

Image:

Character Area:	
Horizontal:	240 ± 5 mm (9.45 ± 0.2")
Vertical:	180 ± 5 mm (7.09 ± 0.2")

IMAGE POSITION:

To be able to adjust at the center of the CRT. Image is within the area in Figure.

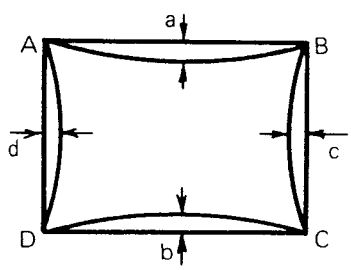


|A−B| ≦ 6 mm (0.236")
|C−D| ≦ 6 mm (0.236")
Normal Condition

DISTORTION:

(A) PINCUSHION

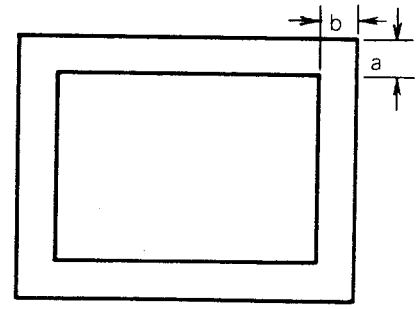
Upper: (a): Less than 2.5 mm (0.098")
Lower: (b): Less than 2.5 mm (0.098")
Right and Left (c), (d):
Less than 2.5 mm (0.098")



Input signal.....Cross-hatch

(B) RECTANGULARNESS & PARALLELOGRAM DISTORTION

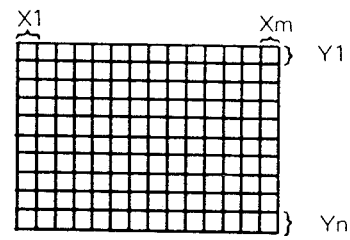
Edge of the image is within the area indicated by the dotted line in Figure.



a..... 4 mm (0.157")
b..... 4 mm (0.157")
Input signal.....Cross-hatch

(C) LINEARITY

Horizontal and vertical linearity shall be less than 7% see Figure.



Horizontal linearity

$$\frac{X\ max - X\ min}{X\ max + X\ min} \times 100(\%) \leqq 7\%$$

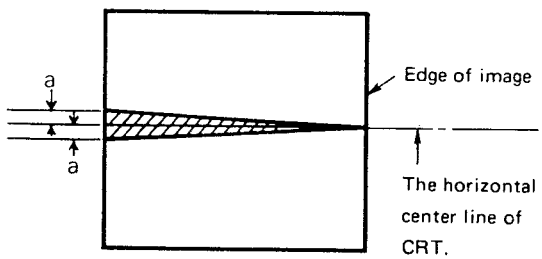
Vertical linearity

$$\frac{Y\ max - Y\ min}{Y\ max + Y\ min} \times 100(\%) \leqq 7\%$$

Note: Maximum and minimum value should not be adjacent to each other.
X max is maximum value among X1~Xm.
X min is minimum value among X1~Xm.
Y max is maximum value among Y1~Yn.
Y min is minimum value among Y1~Yn.
Input signal.....Cross hatch

(D) ROTATION

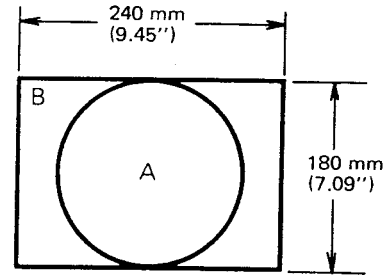
Horizontal center line of the image shall be within the shaded area in Figure.



a..... 2.5 mm (0.098")
Input signal.....Cross-hatch

OVERALL PERFORMANCE:

(A) MIS-CONVERGENCE



Center of the display area
(A) ≦ 0.5 mm (0.0197")
Peripheral display area
(B) ≦ 0.7 mm (0.0276")

Note: Should be measured under the following conditions.
*Without horizontal magnetic field.(terrestrial).
*with vertical magnetic field.
*At room temperature.
*Input signal : Cross-hatch, R.G.B. mixed colors.

(B) RESOLUTION:

Horizontal: 810 Pixels
Vertical: 670 Pixels

INSULATION:

More than 100Mohms
(Between AC line and Chassis)

JITTER :

Less than 1 dot.
(Invisible at a distance of 45 cm (17.7") from CRT surface)

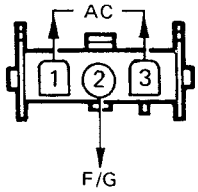
IMAGE SIZE VARIATION:

Cause	Image size variation from the normal image size.	Range of Variation
By Brightness	Within 4 mm (0.157") (Horizontal and Vertical)	Max. to Min.
By Power Supply Voltage	Within ± 4 mm (0.157") (Horizontal and Vertical)	AC 90 ~ 140V AC 180 ~ 260V
By temperature	Within ±4 mm (0.157") (Horizontal and Vertical)	25 ± 25°C

Normal condition, if not mentioned.

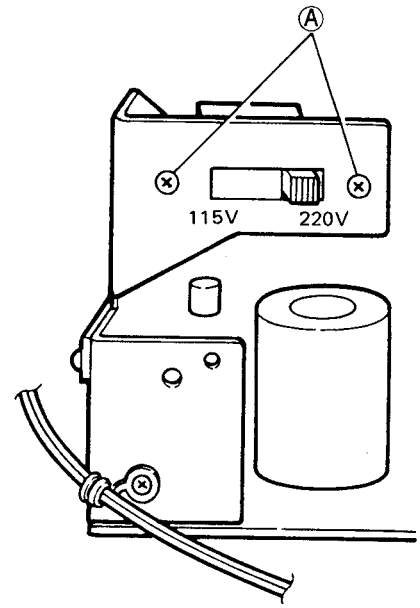
CONNECTOR AND WIRING

POWER SUPPLY :



[1] [3] Power input
AC 90 ~ 140/180 ~ 264V
50/60 Hz

(2) Frame ground



When factory shipping, the power select switch of the display power supply is set at 220V side (AC input 180 ~ 264V).
Therefore when use this unit in the 90 ~ 140V area, loose the 2 screws (A) shown figure before power on then change the switch at 115V side.

CONNECTOR TYPE:

MFR ..... AMP Lock connector.

Display Side	Customer Side
3-Cap-housing (350767-1) Pin Contact (350561-1)	Connector (350766-1) Contact (350570-1)

SIGNAL INPUT:

② ④ ⑥ ⑧ ⑩ ⑫ ⑭ ⑯ ⑱ ⑳
① ③ ⑤ ⑦ ⑨ ⑪ ⑬ ⑮ ⑰ ⑲

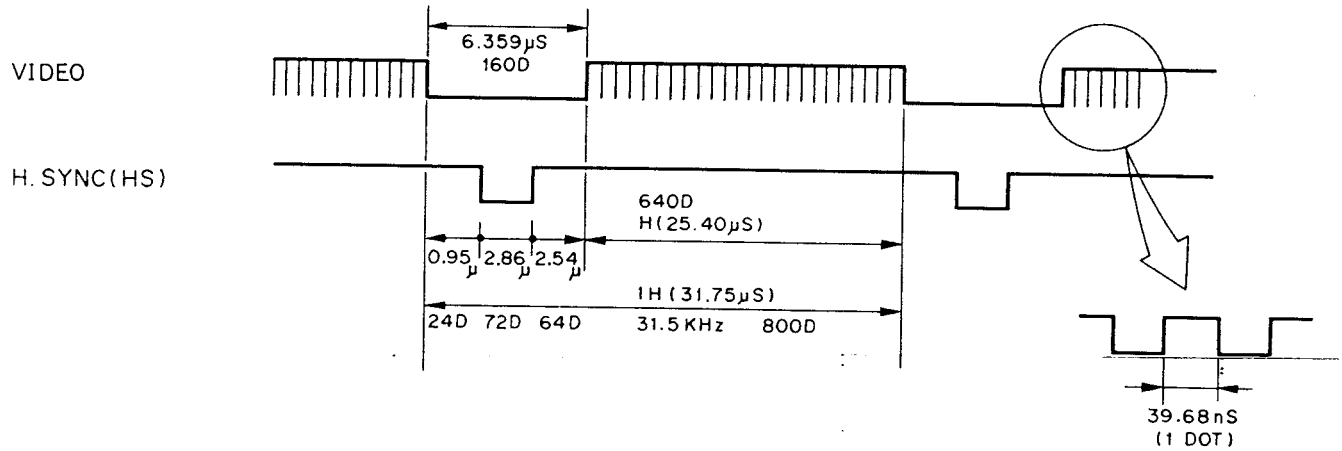
Pin No.	Description		Pin No.	Description	
	TX-1425FHB	TX-1425FHD		TX-1425FHB	TX-1425FHD
1	Vertical Sync (VS)		2	V. RTN (SG)	
3			4	SG	
5	Horizontal Sync (HS)		6	H. RTN (SG)	
7			8	SG	
9		Video (RB)	10	SG	RB RTN (SG)
11		Video (GB)	12	SG	GB RTN (SG)
13	Video (I)	Video (BB)	14	I RTN (SG)	BB RTN (SG)
15	Video (R)	Video (RA)	16	R RTN (SG)	RA RTN (SG)
17	Video (G)	Video (GA)	18	G RTN (SG)	GA RTN (SG)
19	Video (B)	Video (BA)	20	B RTN (SG)	BA RTN (SG)

CONNECTOR TYPE:

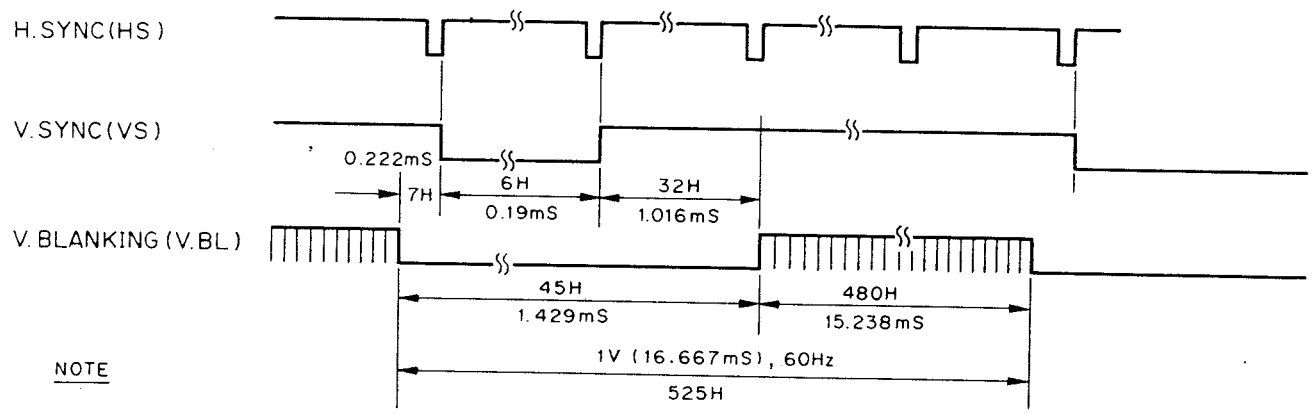
Display Side	Customer Side
MFR ..... Hirose Electric Co., Ltd. 20P Connector (HIF3-20P-254DS)	MFR ..... Hirose Electric Co., Ltd. 20P Connector (HIF3N-20D-254R)

TIMING CHART

HORIZONTAL SYNC: [TX-1425FHB, TX-1425FHD]



VERTICAL SYNC: [TX-1425FHB, TX-1425FHD]



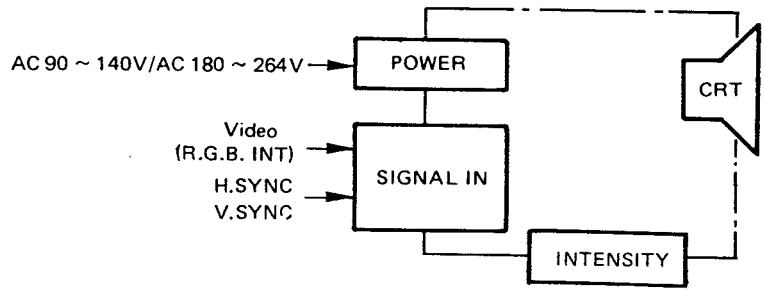
NOTE

1. Cp : 25.2MHz
2. Duty : 100%

CONSTRUCTION AND BLOCK DIAGRAM

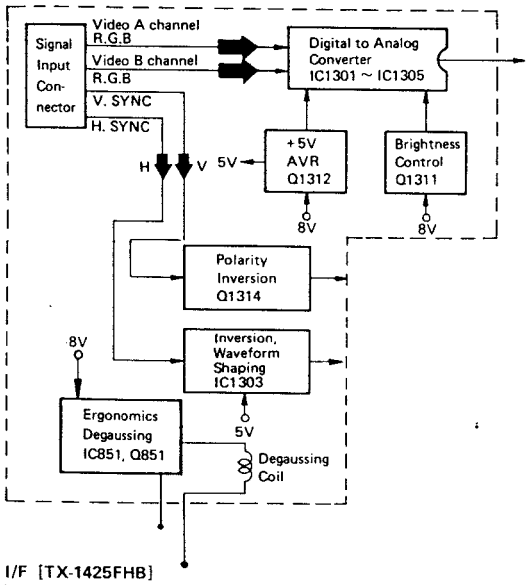
CONSTRUCTION OUTLINE

Note 1. : CRT's Conducting Film is Connected to SG. (Signal Ground)

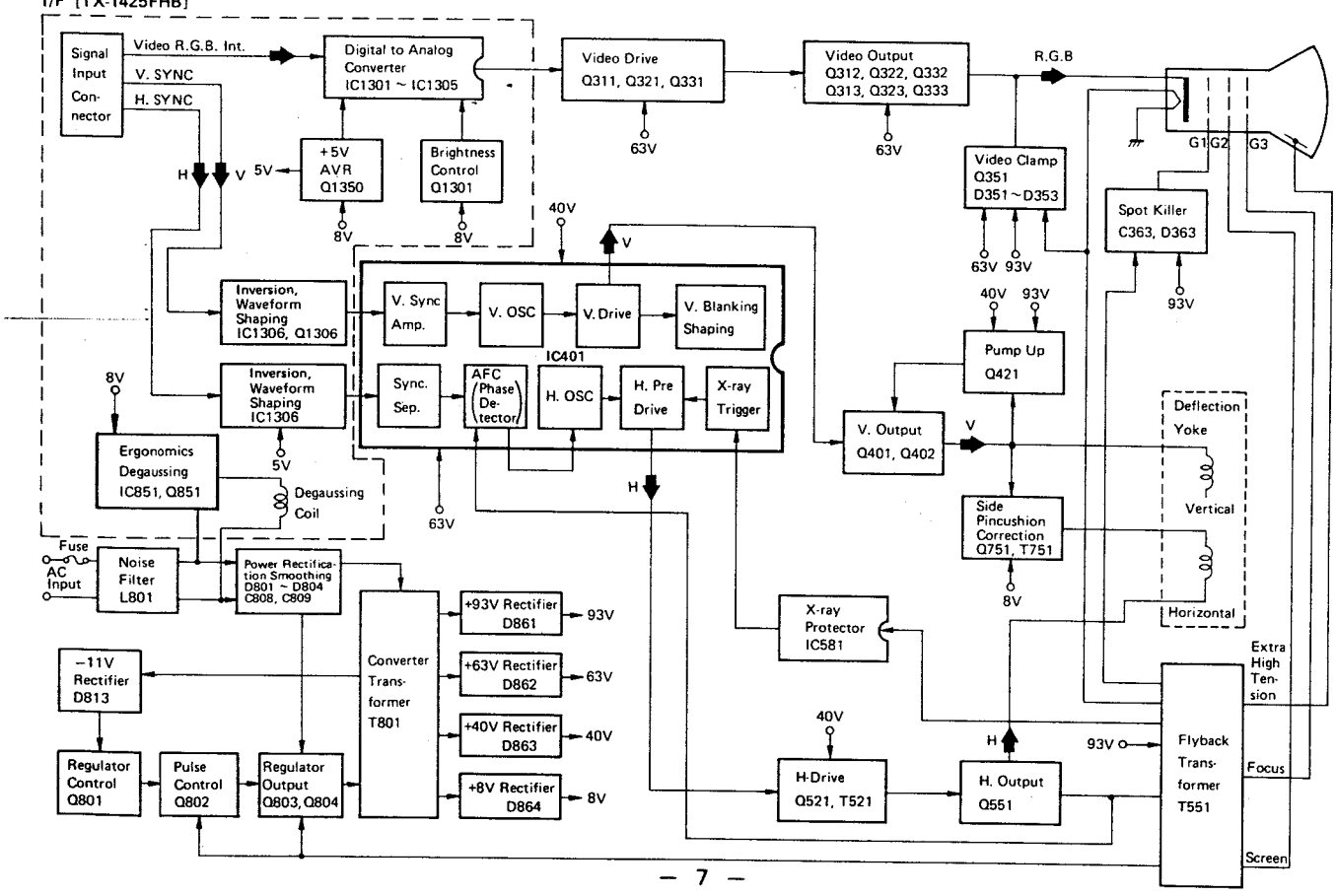


BLOCK DIAGRAM

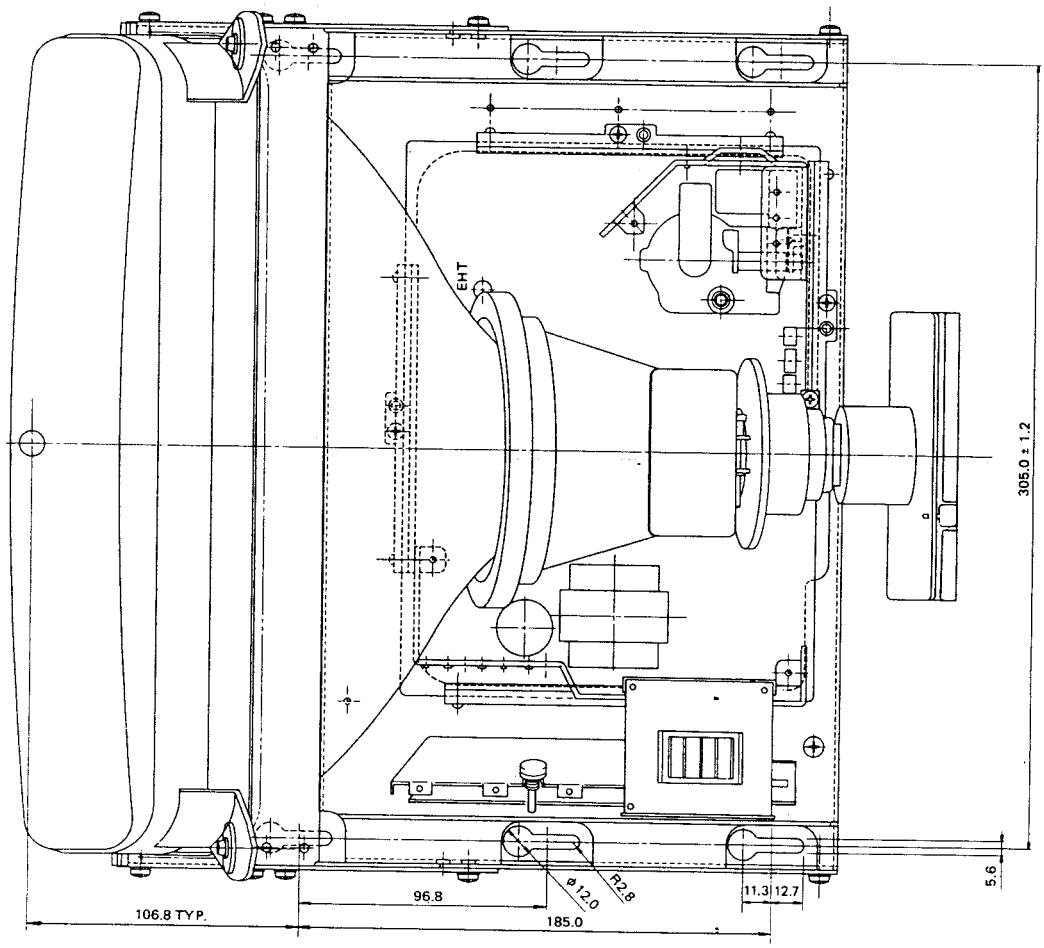
I/F [TX-1425FHD]

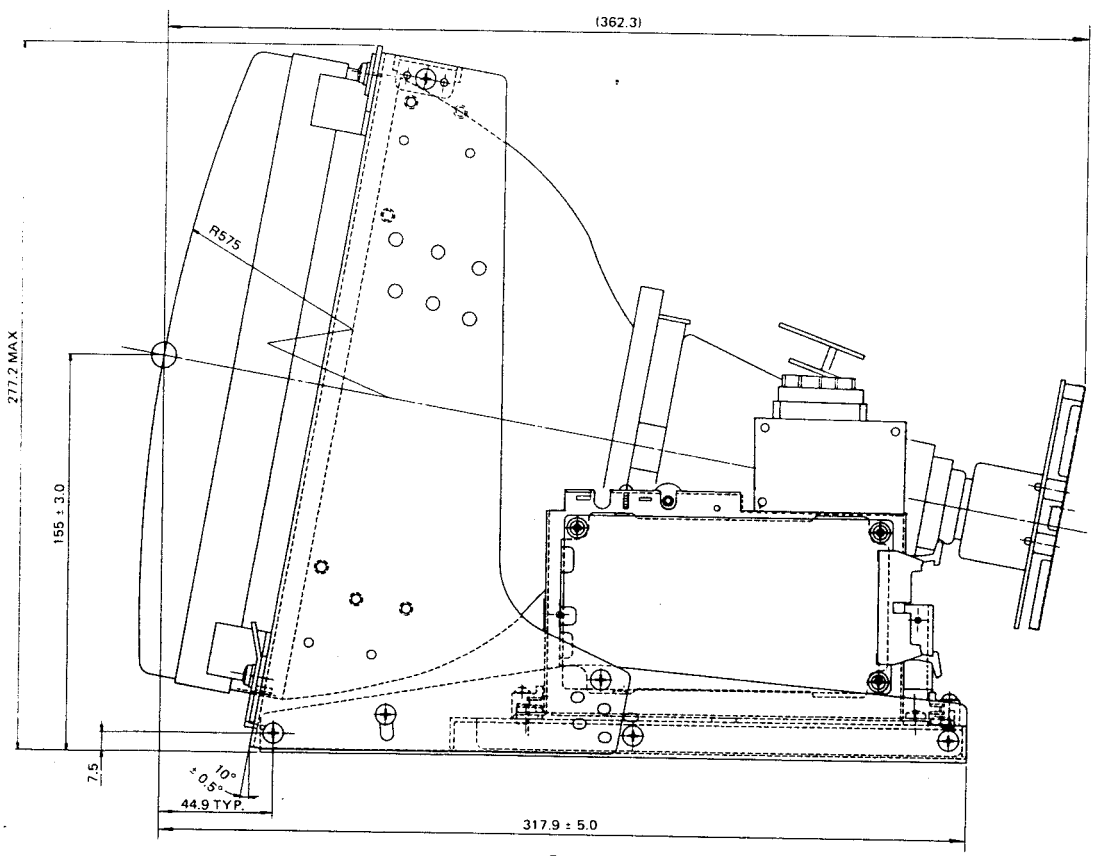


I/F [TX-1425FHB]

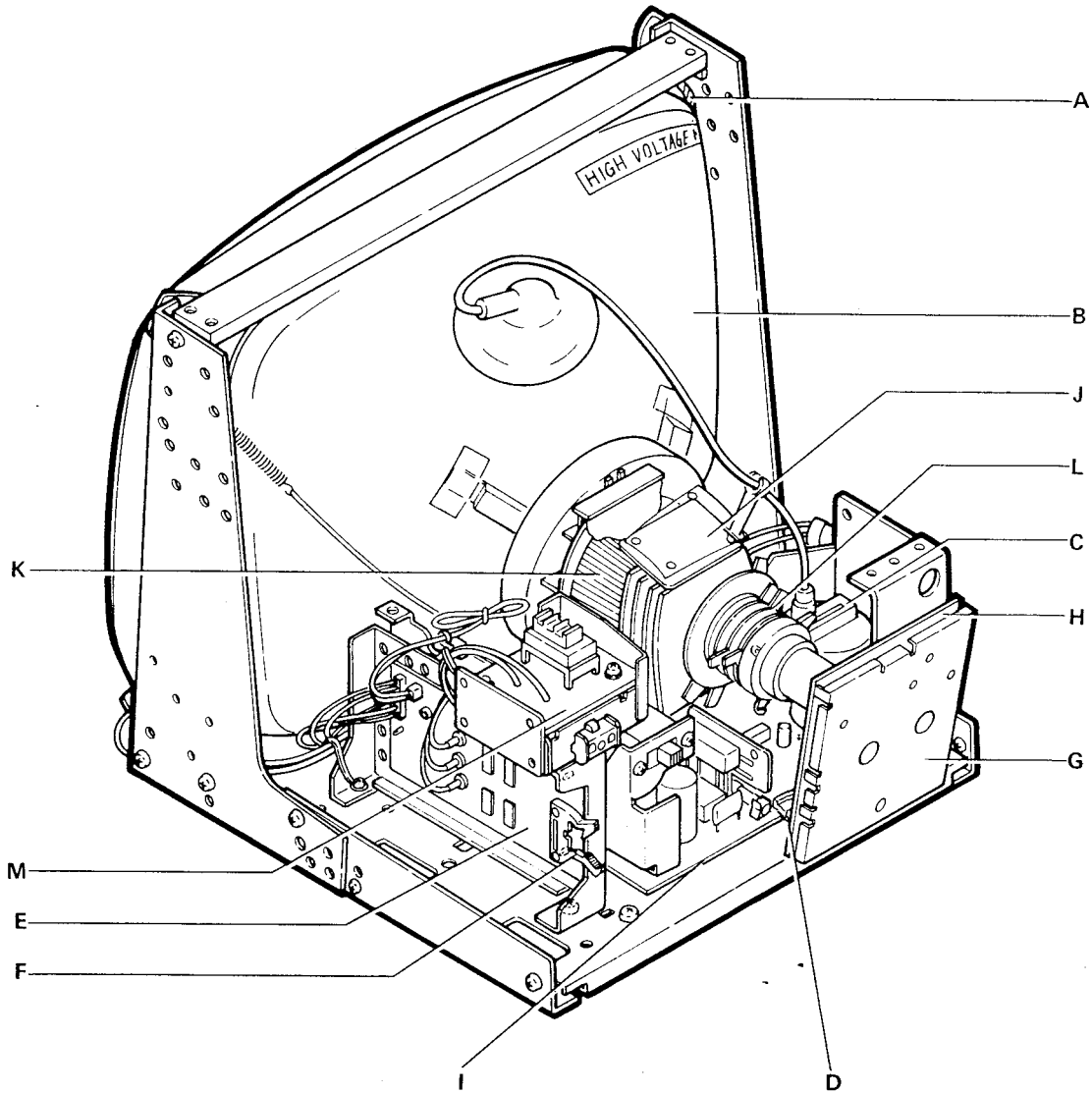


DIMENSIONS


EHT
305.0 ± 1.2
5.6
106.8 TYP.
96.8
185.0
ø12.0
R2.8
11.3
12.7

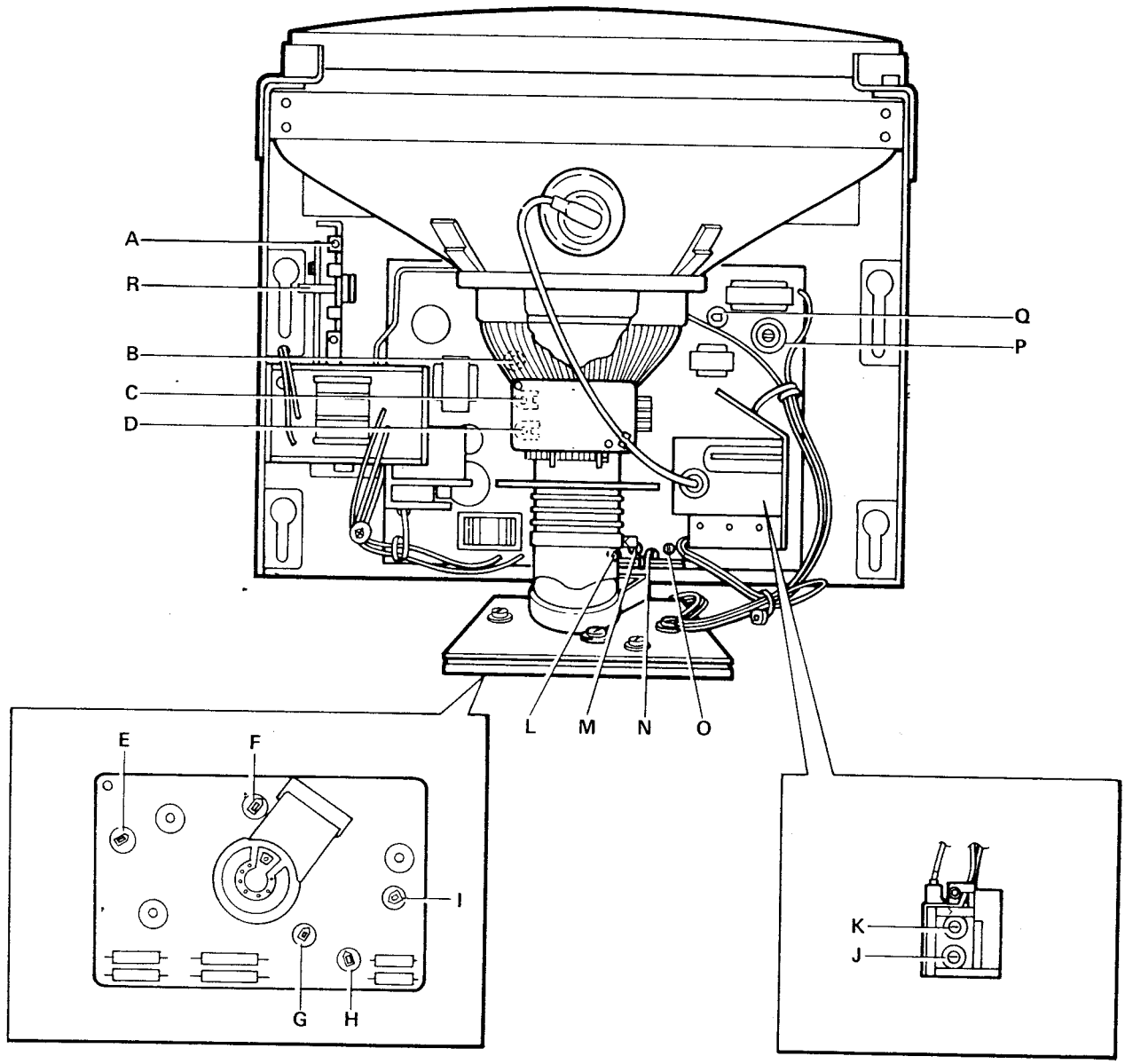

(362.3)
R575
277.2 MAX.
155 ± 3.0
7.5
10° ± 0.5°
44.9 TYP.
317.9 ± 5.0

COMPONENT LOCATION



A ..... Degaussing Coil
B ..... CRT
C ..... Flyback Transformer
D ..... P.C. Board Holder
E..... Interface P.C. Board
F ..... Signal Input Connector
G ..... Shield Plate
H ..... CRT Socket P.C. Board
I ..... Main P.C. Board
J ..... DY P.C. Board
K ..... Deflection Yoke
L ..... Convergence Yoke
M .... Line Filter P.C. Board

CONTROL DESCRIPTION



A . . . .Sub Bright (VR1301)
B . . . .AVR (VR811)
C . . . .TILT (Convergence Potentiometer)(VR452)
D . . . .AMP (Convergence Potentiometer)(VR451)
E . . . .G. Gain (VR321)
F . . . .G. Low-Light (VR352)
G . . . .R. Low-Light (VR351)
H . . . .B. Low-Light (VR353)
I . . . .B. Gain (VR331)
J . . . .Screen VR.
K . . . .Focus VR.
L . . . .V. Hold (VR401)
M . . .H. Hold (VR501)
N . . . .V. Center (VR431)
O . . . .Height (VR402)
P . . . .H. Width (L551)
Q . . . .V. PCC (VR751)
R . . . . Intensity VR (VR305)

CAUTION FOR ADJUSTMENT AND REPAIR

1. Degaussing is inevitably required at purity adjustment or convergence adjustment.
2. At the factory, white balance meter is used but we described the data in simple way.
3. If you check or adjust electrical specification or function, more than 20 minutes burn-in is required.
4. Reforming of the leadwire is required after your repair work.

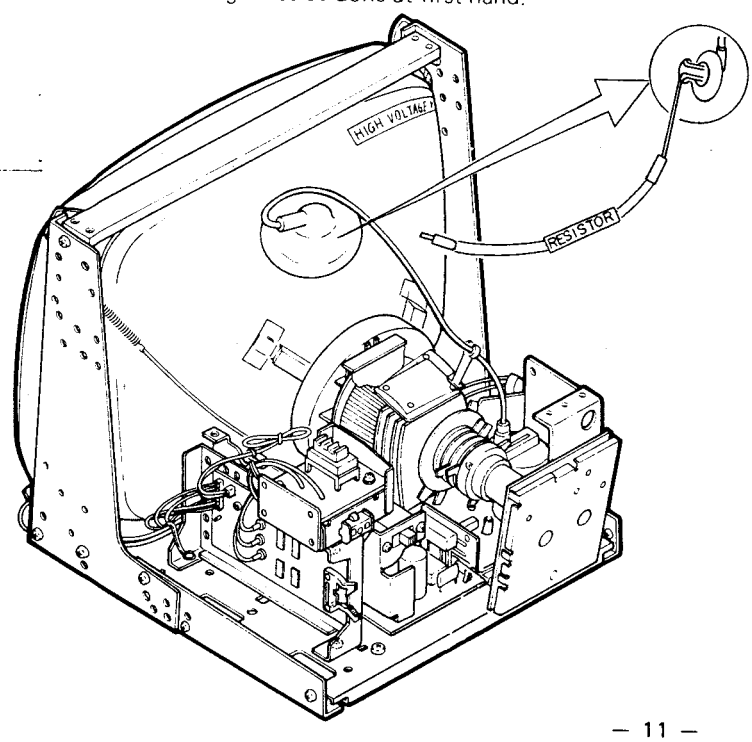
CAUTION FOR SERVICING

In case of servicing or replacing CRT, high Voltage sometimes remains in the anode of CRT. So, completely discharge high voltage before servicing or replacing CRT so as to prevent a shock to the serviceman.

CRT Anode Discharge

1. When you check the CRT anode or replace CRT, discharge the CRT anode to the external conductive coating (aquadag) of CRT, especially you make it right after the power-off.
2. Ground the jumper wire which has the resister (30kV < resisting pressure 100MΩ) on CRT aquadag or grounding fin and insert the other point into CRT anode.

NOTE: Grounding must be done at first hand.



This model has a section that does not share a common ground with the power supply section. The different sections are referred to as the HOT section and the COLD section in the precautions below.

1. Do not touch the HOT section and the COLD section at the same time. You may receive an electric shock.
2. Do not short the HOT section to the COLD section. This could blow the fuse or even damage parts.
3. Never measure the HOT section and the COLD section at the same time when using tools such as oscilloscopes or multimeters.

ADJUSTMENT PROCEDURE

1. Voltage adjustment

1) +B1 (+93V) Voltage adjustment
   Adjust VR811 (B-Adj.) so that the voltage at TP86 (test point of TNP85804) shall be 93V.
2) Confirming the +B2, +B3, +B4.
   2-1 +B2 (+63V)
   Confirm the voltage across C862 is 63 ±2V.
   2-2 +B3 (+40V)
   Confirm the voltage across C863 is 40 ±2V.
   2-3 +B4 (+8V)
   Confirm the voltage across C864 is 8 ±1V.

2. Purity adjustment

Since the yoke and CRT are provided as an assembly, perform this procedure only when a problem is found in the execution of "the final confirmation method for purity".

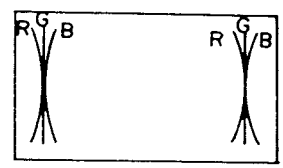
1) Make sure that this adjustment is done later than 30 minutes after power on.
2) Degauss the magnetism of chassis and CRT with degaussing coil.
3) Confirm that static convergence is roughly matched.
4) Display Red color solely with the signal generator.
5) Move the D.Y. rearward and adjust the purity magnet so that the center of the screen displays a pure red disk.
6) After the adjustment of step 5, re-adjust the static convergence if some gap was found.
7) After the item 6, repeat the step 5 again.
8) Display green and blue disks. Adjust the purity magnet so that each disk is at the center of the screen simultaneously.
9) Display only the red color again and move the D.Y. forward in order to display red on the whole screen.
10) Confirm purity in each direction by rotating the set to direction of East, West South and North after demagnetize by external degaussing coil.
11) If magnetism remains even after the adjustment, use the compensation magnet to obtain purity.

The final confirmation method purity

In the natural magnetic field, rotate the monitor in the direction of East, West, South and North. Earth's magnetic field may cause magnetism on the minitor. Confirm that the automatic degaussing circuit built in the monitor can erase the amount of magnetism which was introduced with above rotation.

3. Convergence adjustment

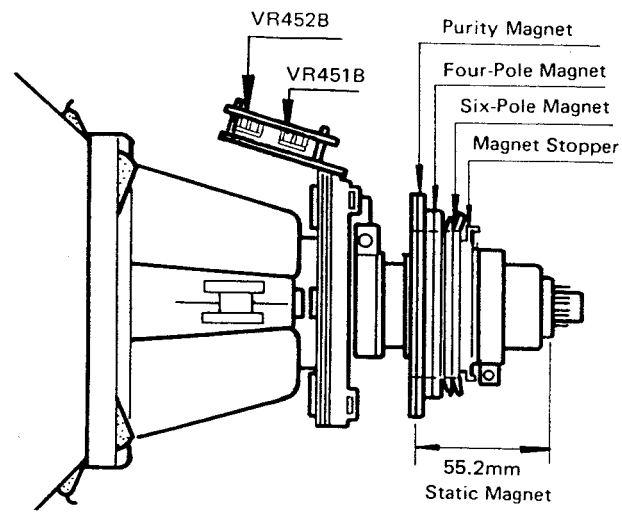
1) Input the mixed dot pattern of R and B with the signal generator.
2) Match the R and B at screen center with four pole magnet. (Rotate the two ring magnets and R.B. move circularly with the other direction respectively.)
3) Input the mixed dot pattern of R.G.B. with the signal generator.
4) At the screen center, match R and B to G with the six-pole magnet.
5) Make the fine tuning of D.Y. location so as to get good convergence on the whole screen.
6) Adjust the convergence of the fringe area (four corners), using VR451B and VR452B.



If the convergence on the fringe area is bad, put "the magnetic small pieces" at the four corners of D.Y. and fix them so the convergence becomes better.

Note: Caution for putting "the magnetic small pieces".
(1) Take more than 20mm distance from anode cap.
(2) Don't put them together.
(3) Don't put it on some other labels.

7) After the convergence adjustment, confirm if purity is OK.
   In case purity is no good, back to [2] purity adjustment and re-adjust the purity.
8) Repeat the above procedure in several times to get the best purity and convergence.



4. Horizontal Hold (H. Hold) adjustment

Adjust VR501 (H. Hold) to set the character area in the horizontal center of the screen.

5. Vertical Hold (V. Hold) adjustment

Turn the vertical hold adjustment (VR401) in the direction of lower oscillation frequencies (clockwise) until the screen begins to roll. Then, turn the adjustment back counter-clockwise until the vertical synchronization.

6. V. Center adjustment

Adjust VR431 (V. Center) to locate the character area at the CRT center.

7. H. Width adjustment

Adjust L551 (Width) so that the H. Width is 240 mm (9.45").

Note: The adjustment moves L551's core up and down in the coil.

8. Height adjustment

Adjust VR402 (Height) so that the vertical size is 180 mm (7.09").

9. White balance, CRT cutoff, Sub Bright adjustment

1) Turn off the video signal only.
2) Turn the low light control R(VR351), G (VR352), and B (VR353) counterclockwise from the pattern side to the MAX position (in the direction of brighter light).
3) Turn the screen control. Also turn the low light control of the 1st lit color fully clockwise to the MIN position from the pattern side. Further, turn the screen control and turn the low light control of the 2nd lit color to the MIN position.
4) Turning the screen control, set it to the point where the last lit color barely lights.
5) Turn the low light control of the 1st lit and 2nd lit colors until the back raster is whitened.

Note: The luminance in items 2) to 5) should be made darker as much as possible until it comes to have something to do with the color tracking and adjustment thereafter.

6) Turn the screen control until it comes to the point where the back raster and flyback line disappear.
7) Connect a digital voltmeter provided with a high impedance probe, between the test point of the CRT G2 and ground and measure G2 voltage. Then, turn the screen VR to the extent of −10V, thereby reducing G2 voltage. After this, remove the probe.
8) Turn on the video signal.
9) Turn the intensity control (VR305) until it is increased to a maximum.
10) Turn the SUB-BRIGHT control (VR1301) to adjust the luminance to 85 cd/m^2.
11) Turn the G-GAIN control and B-GAIN control until the chrominance is X = 0.281 and Y = 0.311, respectively.
12) Turning the luminance control, set the luminance to 5 cd/m^2 (nit).
13) Check the chrominance value and if it comes out of the specified chrominance range, turn the low light control "G-LOW" and B-LOW" until it comes within the specification.
14) Cause the luminance control to be varied from maximum value to the minimum value and confirm the luminance and the color tracking. If anything is found unusual, repeat the steps 7) to 11).
15) Lock the screen control with lacquer coating.

10. V. PCC (Vertical pincusion) adjustment

1) Display cross-hatch (Green color) with the signal generator.
2) Adjust VR751 (V. PCC) to minimize vertical pincushion.

11. Focus adjustment

Turn the focus knob to make sure the focusing of the entire image is changed uniformly, and set the knob to a position where the focus balance of red, green, and blue colors is best.

DISASSEMBLY INSTRUCTIONS

- **Removing the Line filter P.W.A (Figure 1)**

(1) Desolder and remove the wires P3, P4, P7 and P8 ① from Line filter P.W.A.
(2) Remove the 3 screws ②.

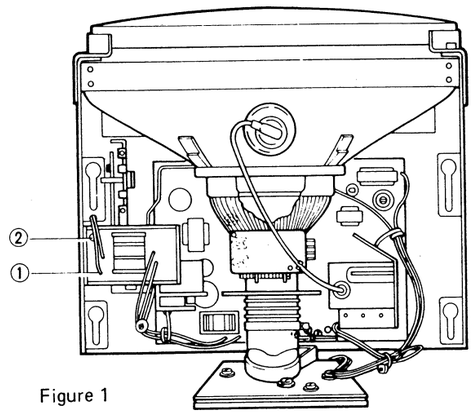
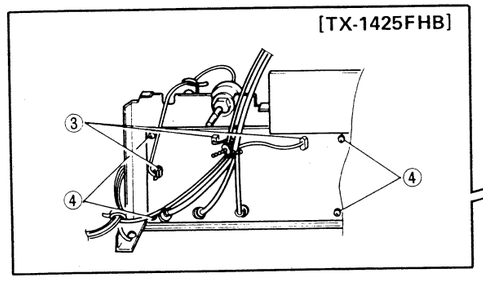


Figure 1

- **Removing the interface P.W.A (Figure 2)**

(1) Remove the F1, F2 and F6 connector ③ [TX-1425FHB]
Remove the CN1302 and CN1303 connector ③ [TX-1425FHD]
(2) Remove the interface P.W.A from four locking supports ④. [TX-1425FHB]
Remove the interface P.W.A from three locking supports ④. [TX-1425FHD]



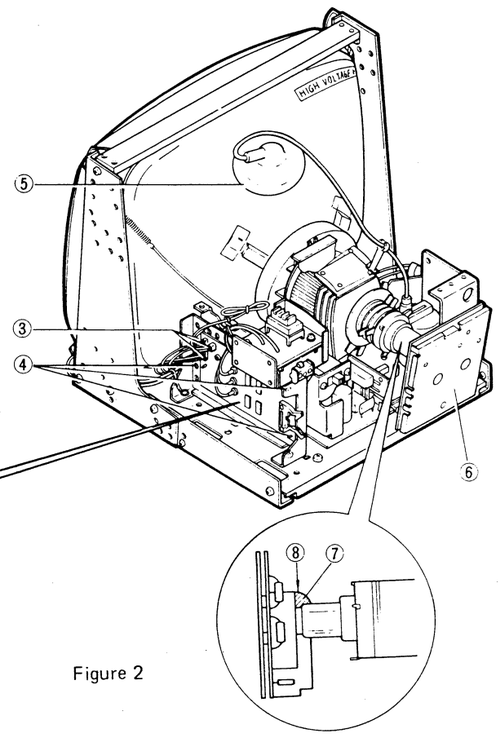


Figure 2

- **Removing the CRT (Figure 2, 3, 5)**

(1) Remove the anode cap ⑤. (Care must be taken as high voltage may be remaining.)
(2) Remove the CRT socket P.W.A ⑥ from CRT.
Note :
1) Cut the silicone glue ⑦ of CRT socket frame arrow direction by using knife ⑧.
2) Be careful not touch the knife to CRT neck.
3) After replacement or check of the CRT socket P.W. Board, put the silicone glue again.
(3) Remove the deflection yoke connector CN104 ⑰ from main P.W. Board. (Figure 5)
(4) Remove the CRT fixing screws from the frame ⑨.

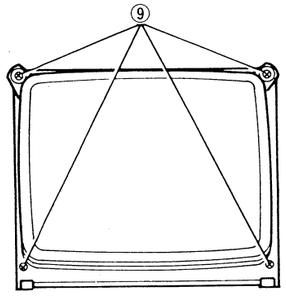


Figure 3

- **Removing the CRT socket P.W.A (Figure 4, 5)**

(1) Remove the CRT socket P.W.A ⑩ from the CRT.
(2) Remove the connector R.G.B ⑪ from CRT socket P.W.A.
(3) Cut the CRT socket P.W.A wire tightening band ⑫ with nipper. Be careful do not damage wire.
(4) Desolder and remove the 9-pin housing CN102B ⑬ from CRT socket P.W.A.
(5) Desolder and remove the wires E1 to E3 and G2 ⑭ from CRT socket P.W.A.
(6) Desolder and remove the wire ⑮ from CRT socket.

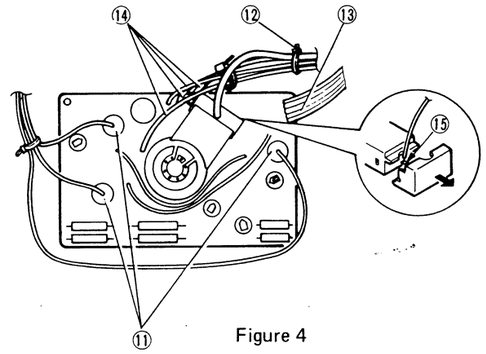


Figure 4

- **Removing the main P.W. Board (Figure 5)**

(1) Remove the anode cap ⑯. (Care must be taken as high voltage may be remaining.)
(2) Remove the CRT socket P.W.A ⑩.
(3) Remove the deflection yoke connector CN104 ⑰ from main P.W. Board.
(4) Remove the degauss coil connector CN107 ⑱ from main P.W. Board.
(5) Remove the ground terminal fixing screw ⑲ from main P.W. Board.
(6) Desolder and remove the wire AC1, AC2 and E3 ⑳ from main P.W. Board.
(7) Remove the P.W. Board holder fixing screw ㉑ from the plate, and remove the P.W. Board holder ㉒.
(8) Pull out the main P.W. Board ㉓ to rear.

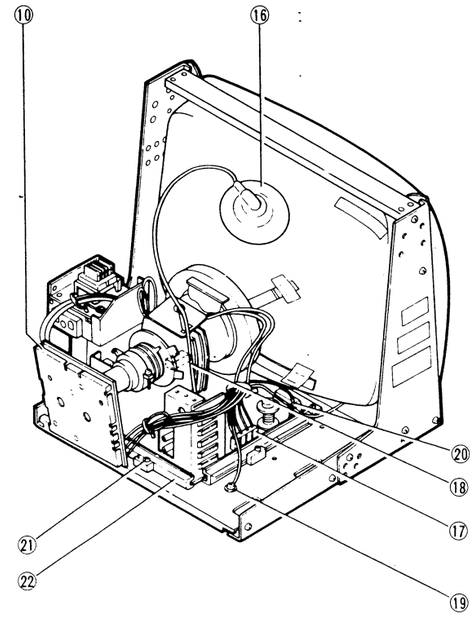
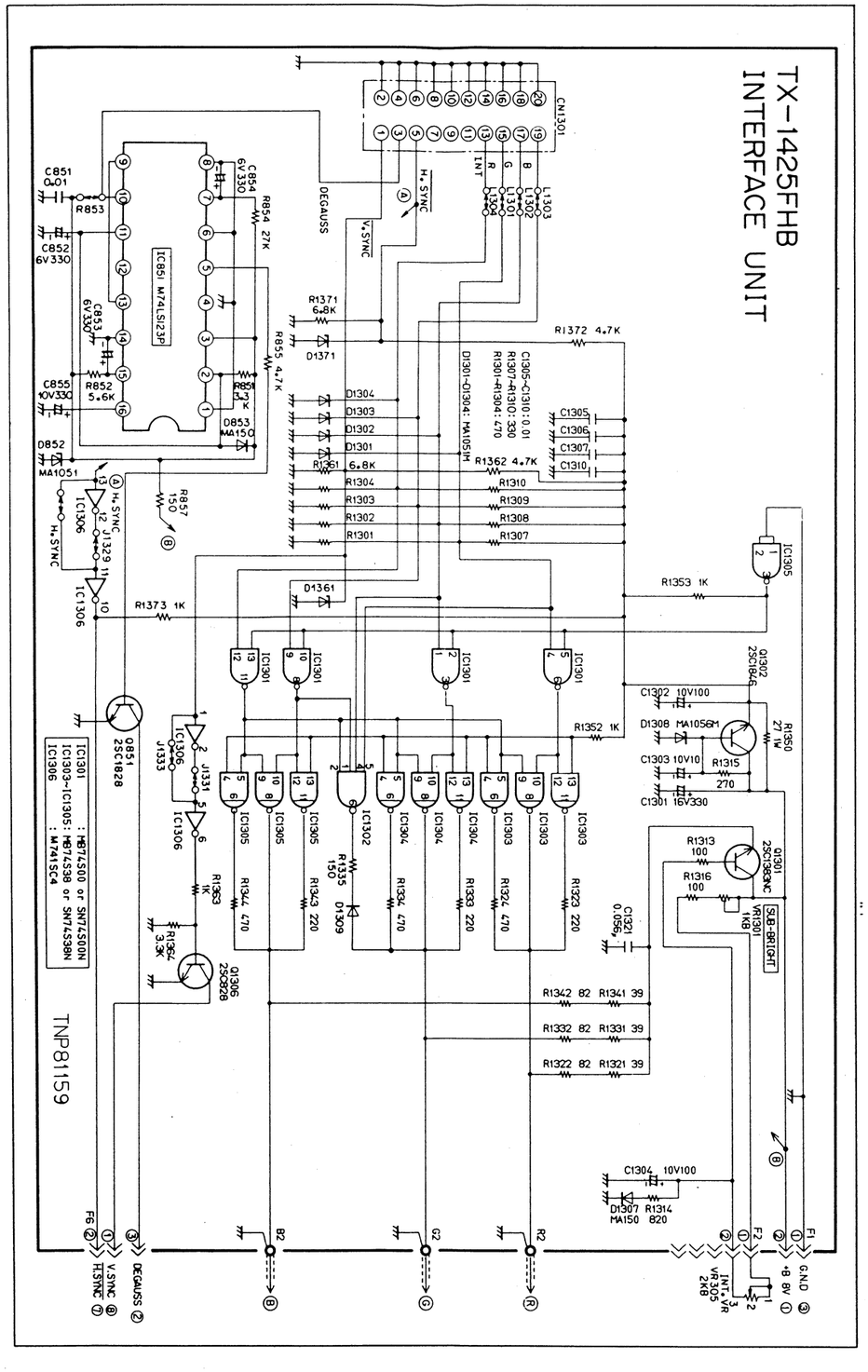


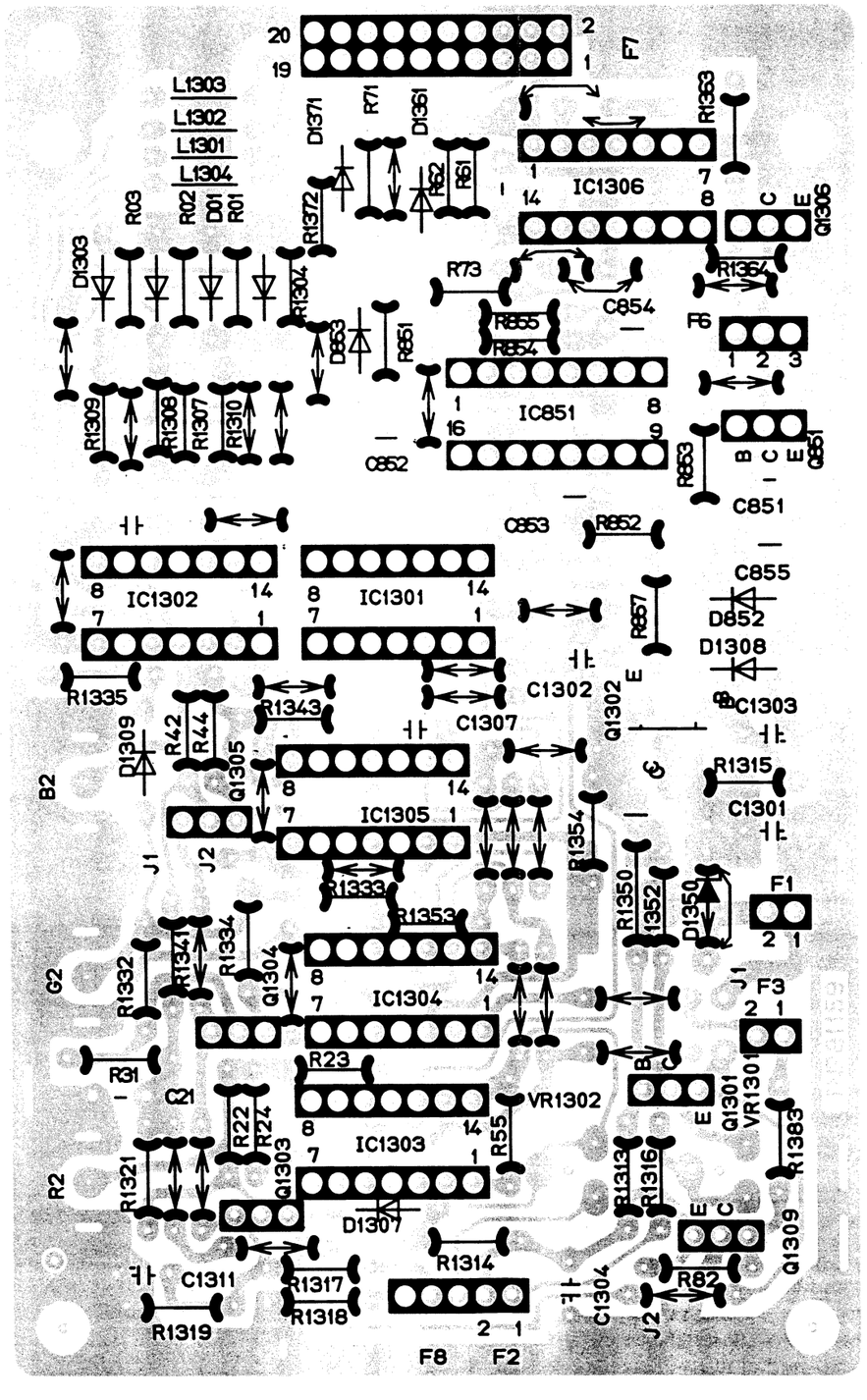
Figure 5

SCHEMATIC DIAGRAM FOR INTERFACE CIRCUIT (TX-1425FHB)



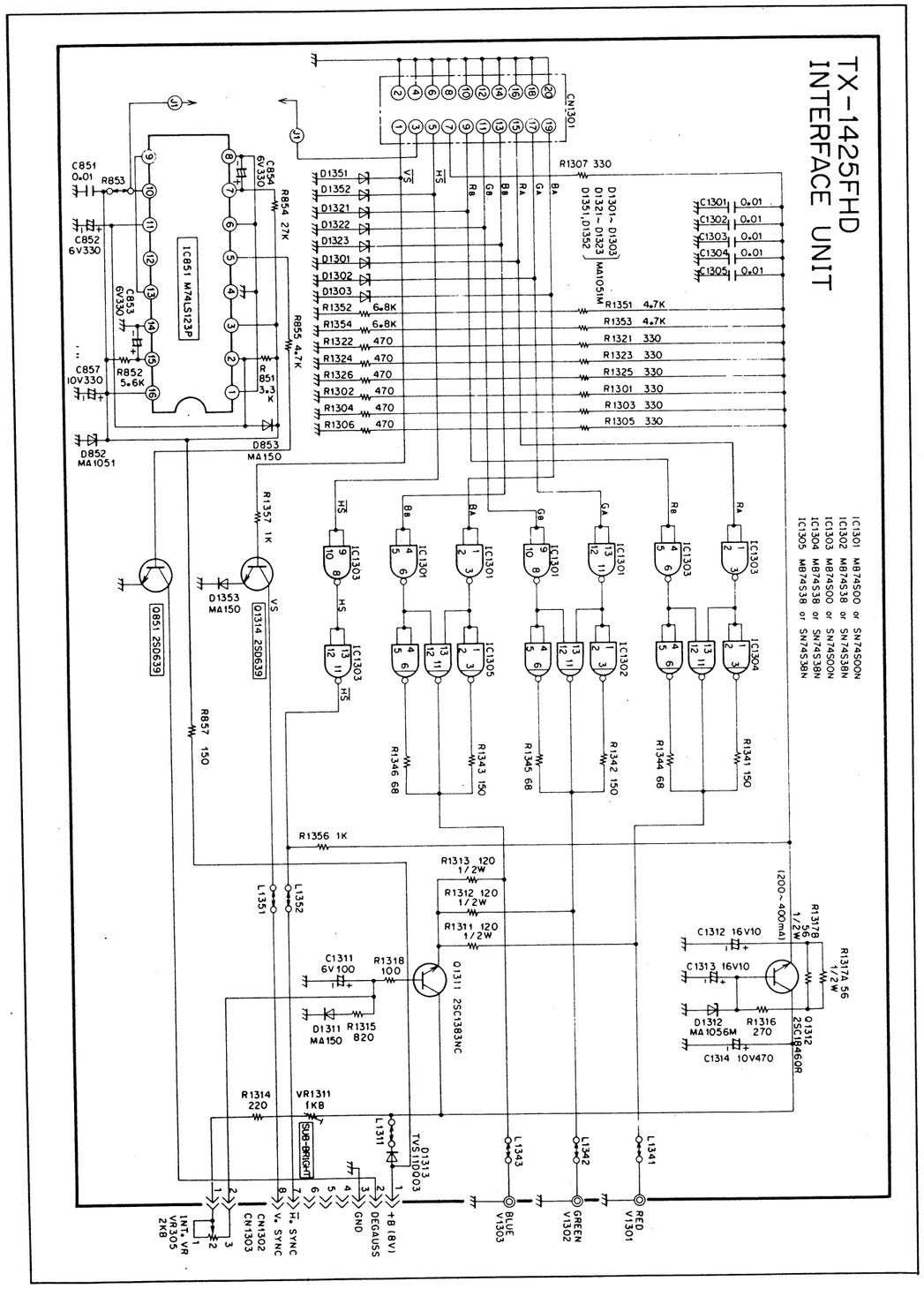
INTERFACE P.C.BOARD SOLDER VIEW (TX-1425FHB)

TNP81159



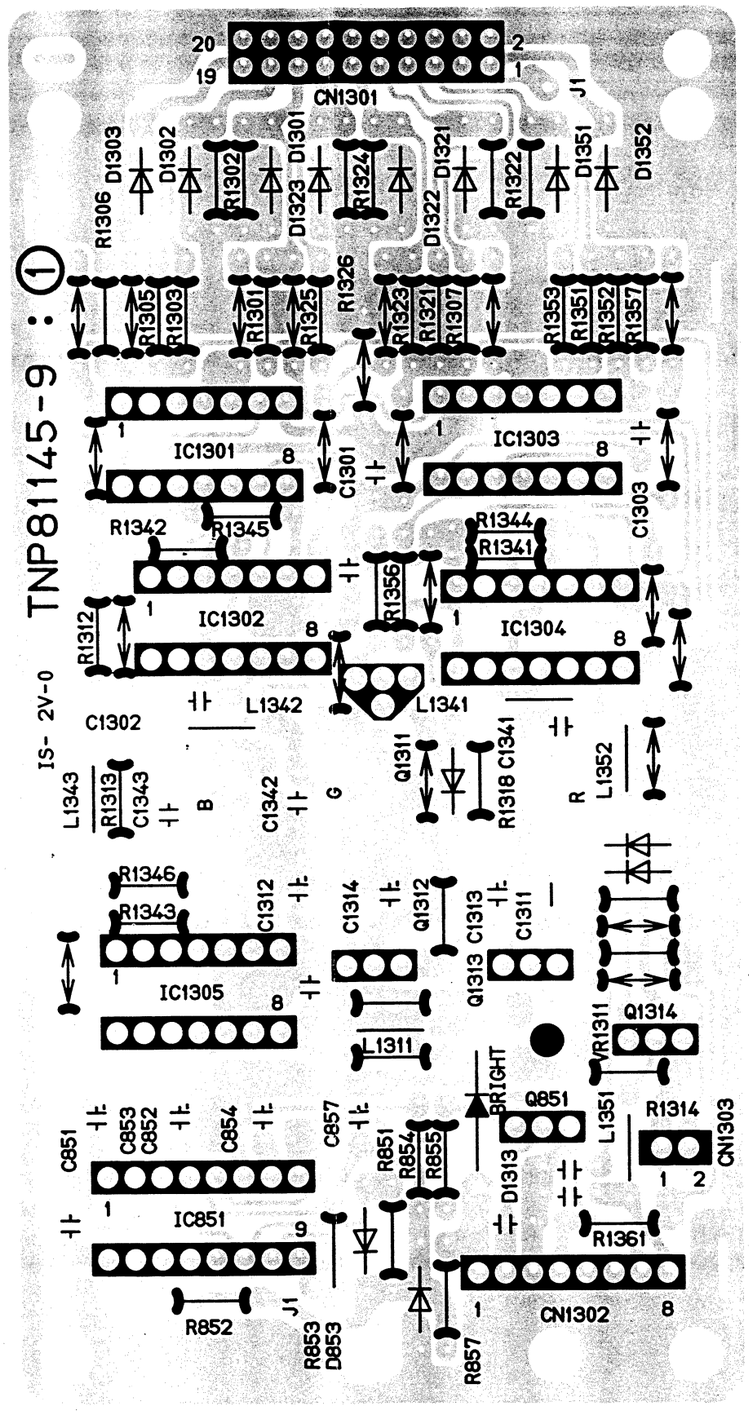
TX-1425FHB
TX-1425FHD

SCHEMATIC DIAGRAM FOR INTERFACE CIRCUIT (TX-1425FHD)



INTERFACE P.C. BOARD SOLDER VIEW (TX-1425FHD)

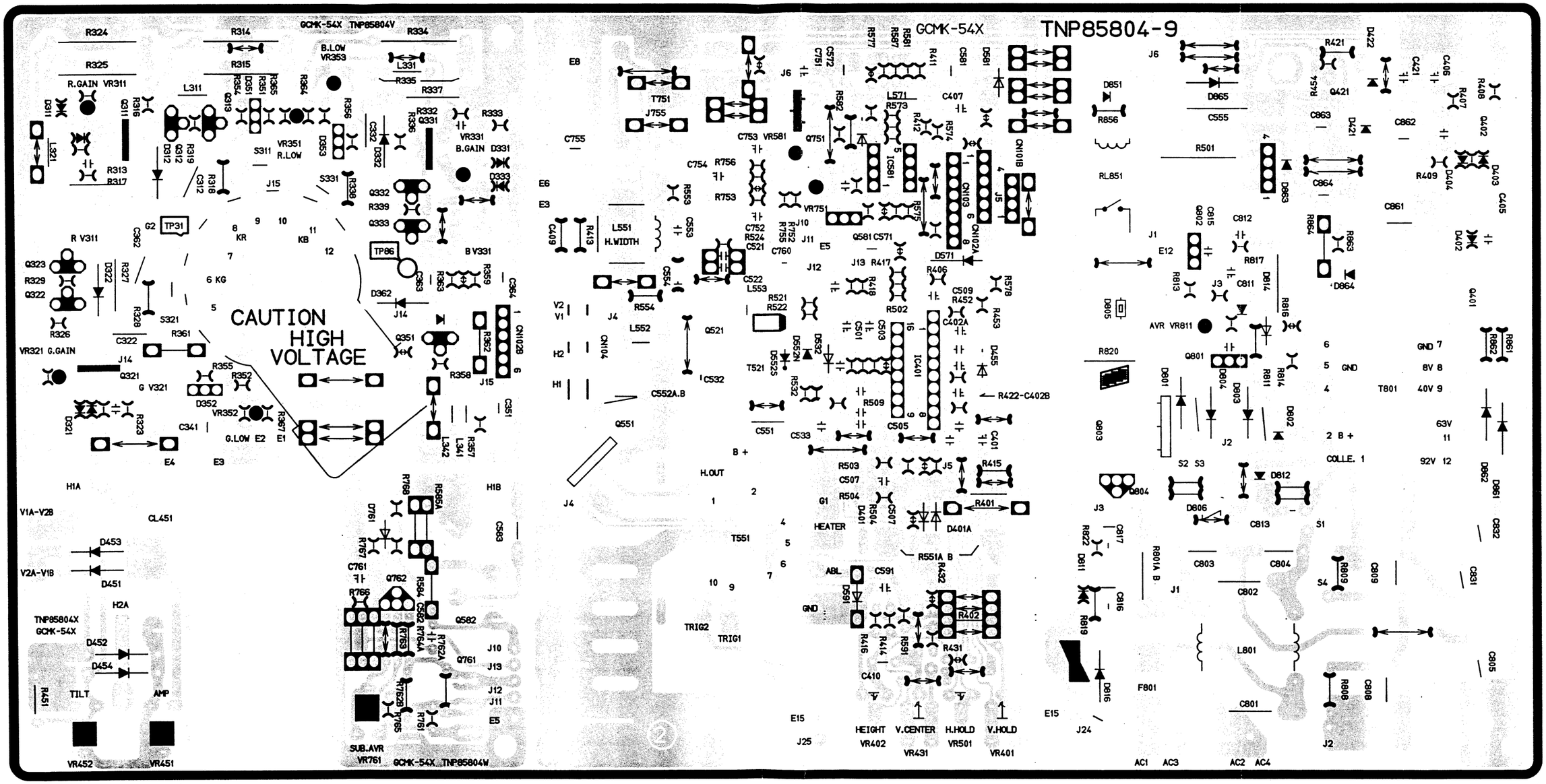
TNP81145



MAIN P.C. BOARD SOLDER VIEW

CRT P.C. BOARD PART

TNP85804

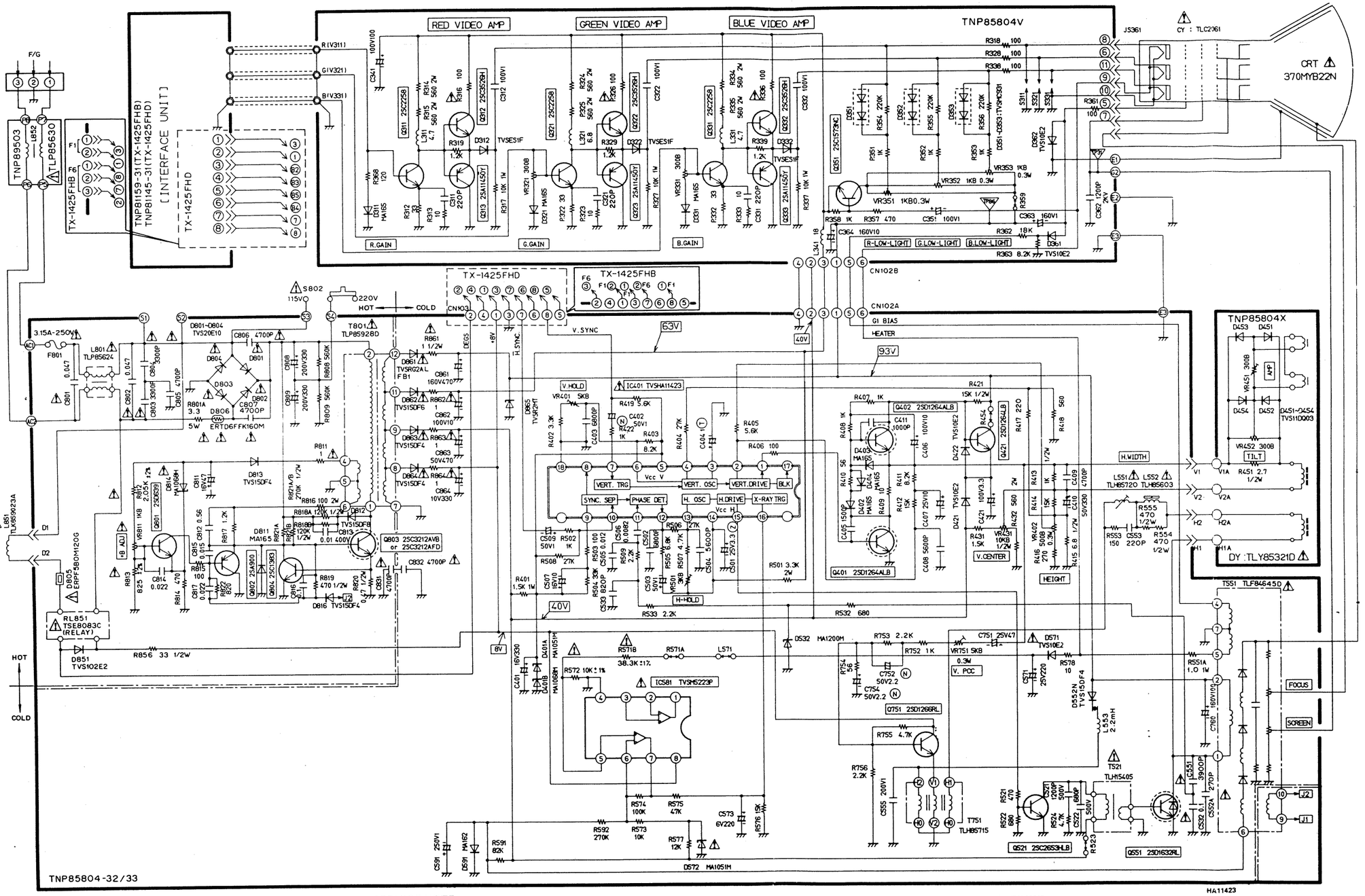


DY P.C. BOARD PART

UNNECESSARY PART

MAIN P.C. BOARD PART

SCHEMATIC DIAGRAM FOR TX-1425FHB AND TX-1425FHD

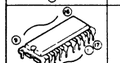
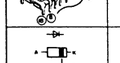
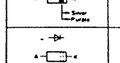
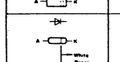
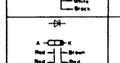
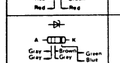
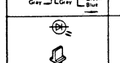
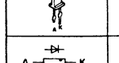
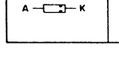


IMPORTANT SAFETY NOTICE

The component identified by shading or the international symbol ⚠ on this schematic diagram incorporates special features important for protection from X - Radiation, fire and electrical shock hazards. When servicing it is essential that only manufacturer's specified parts be used for those critical components.

NOTE

1. **RESISTOR**
   All resistors are 1/4W resistor.
   Unit of resistance is OHM(Ω). (K=1,000, M=1,000,000)
2. **CAPACITOR**
   Unit of capacitance is μF unless otherwise noted.
3. **COIL**
   Unit of inductance is μH.
4. **VOLTAGE MEASUREMENT**
   a. Voltage is measured by a digital meter with DC 10MΩ OHM/V receiving normal signal.
   b. Use each measurement voltage for reference.

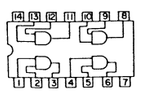
TRANSISTOR, DIODE & INTEGRATED CIRCUIT TERMINAL GUIDE	
	2SB641 2SD636 2SD639
	2SC1383 2SC1573AH
	2SD1264 2SD1264A
	2SC2923
	2SD1541 2SC3212A 2SD1632
	M74ALS08P M74LS86P
	M74LS221P
	HA11423
	silver .....20E10 purple 10E2
	15DF6
	white .....MA150 black MA162
	red-brown .....MA1120M red-red MA1220M
	brown-brown-green ..... MA1051M, RD120EB Gray-Gray-blue MA1068H
	LN217RP
	IID003

SERVICE NOTE

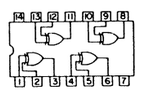
This model has a section that does not share a common ground with the power supply section. The different sections are referred to as the HOT section and the COLD section in the precautions below.

1. Do not touch the HOT section and the COLD section at the same time. You may receive an electric shock.
2. Do not short the HOT section to the COLD section. This could blow the fuse or even damage parts.
3. Never measure the HOT section and the COLD section at the same time when using tools such as oscilloscopes or multimeters.
4. Always unplug the unit before beginning any operation such as removing the chassis.

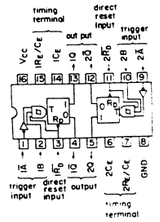
M74ALS08P
QUADRUPLE 2-INPUT POSITIVE AND GATE



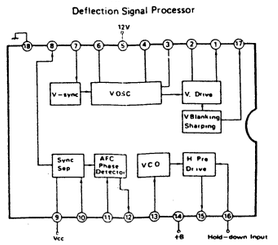
M74LS86P
QUADRUPLE 2-INPUT EXCLUSIVE OR GATE



M74LS221P
MONOSTABLE MULTIVIBRATOR

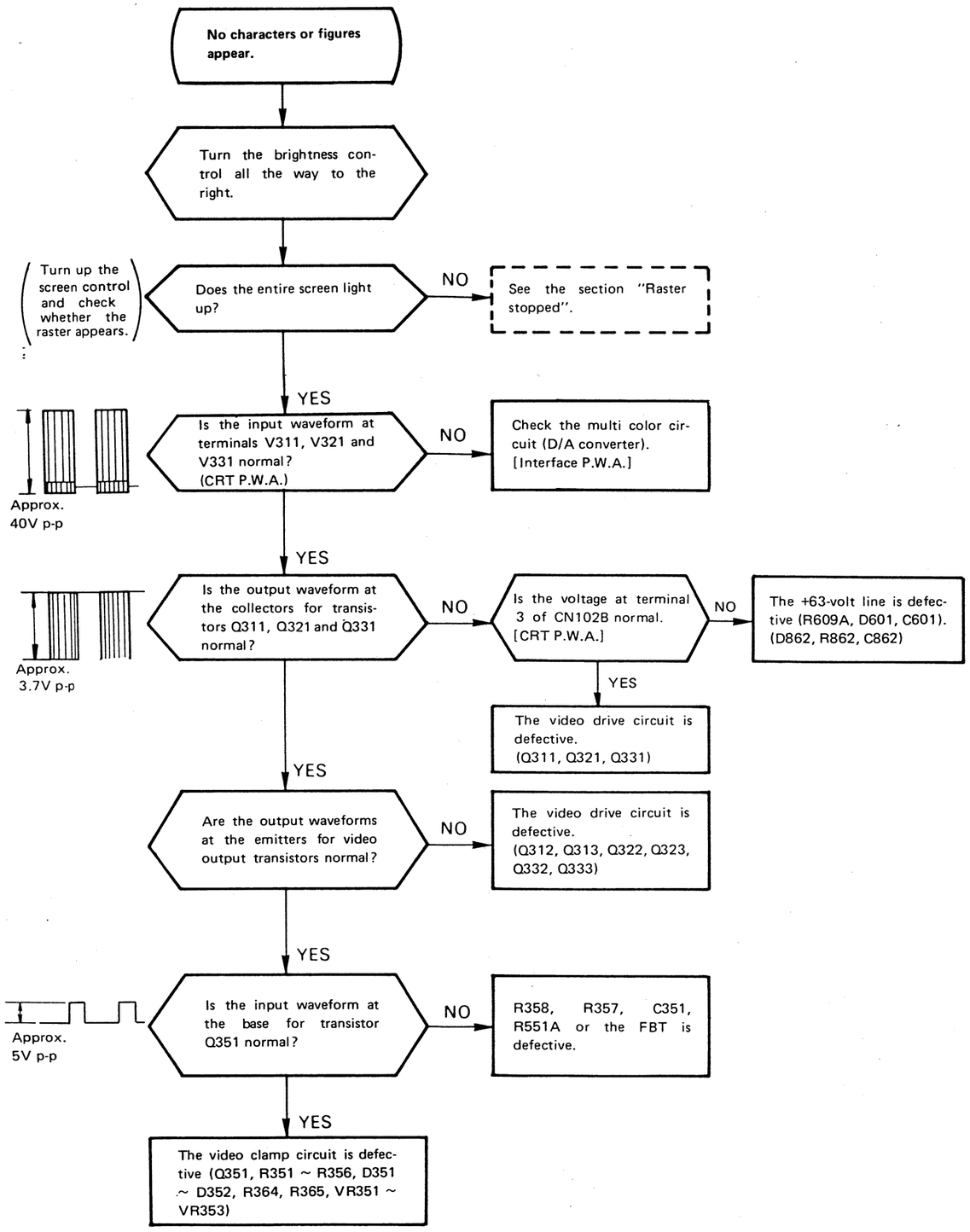


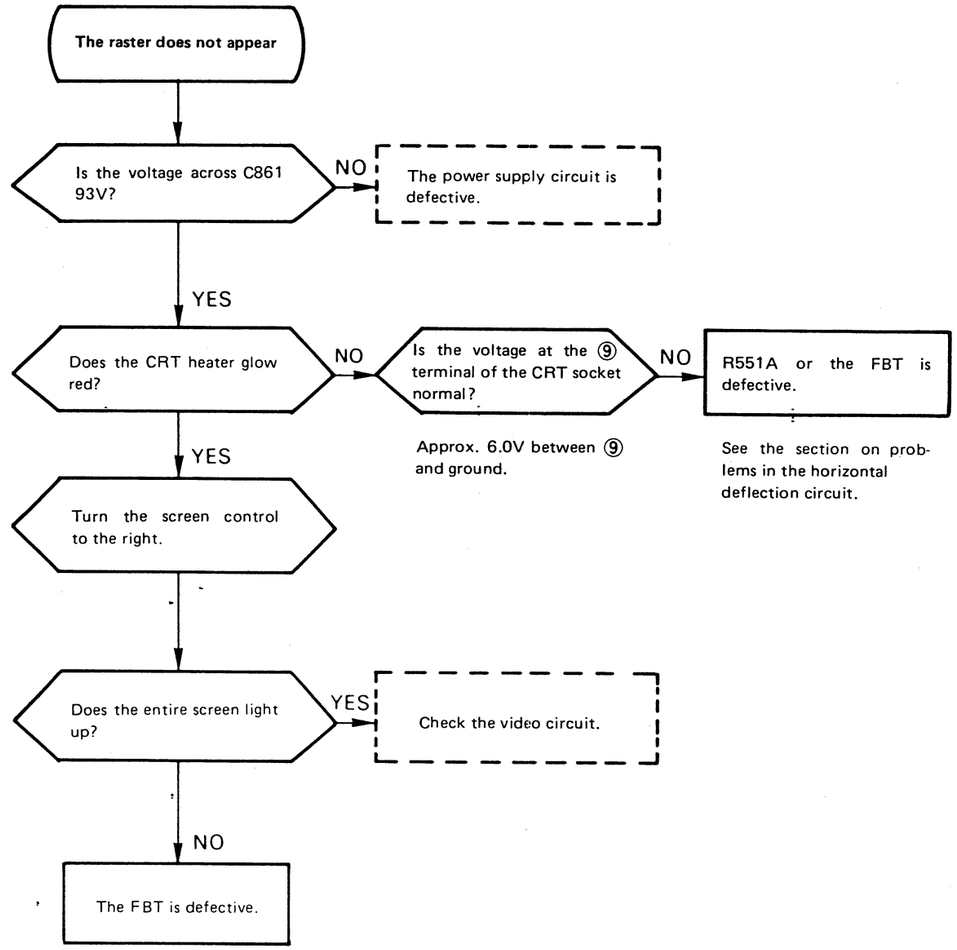
HA11423
Deflection Signal Processor

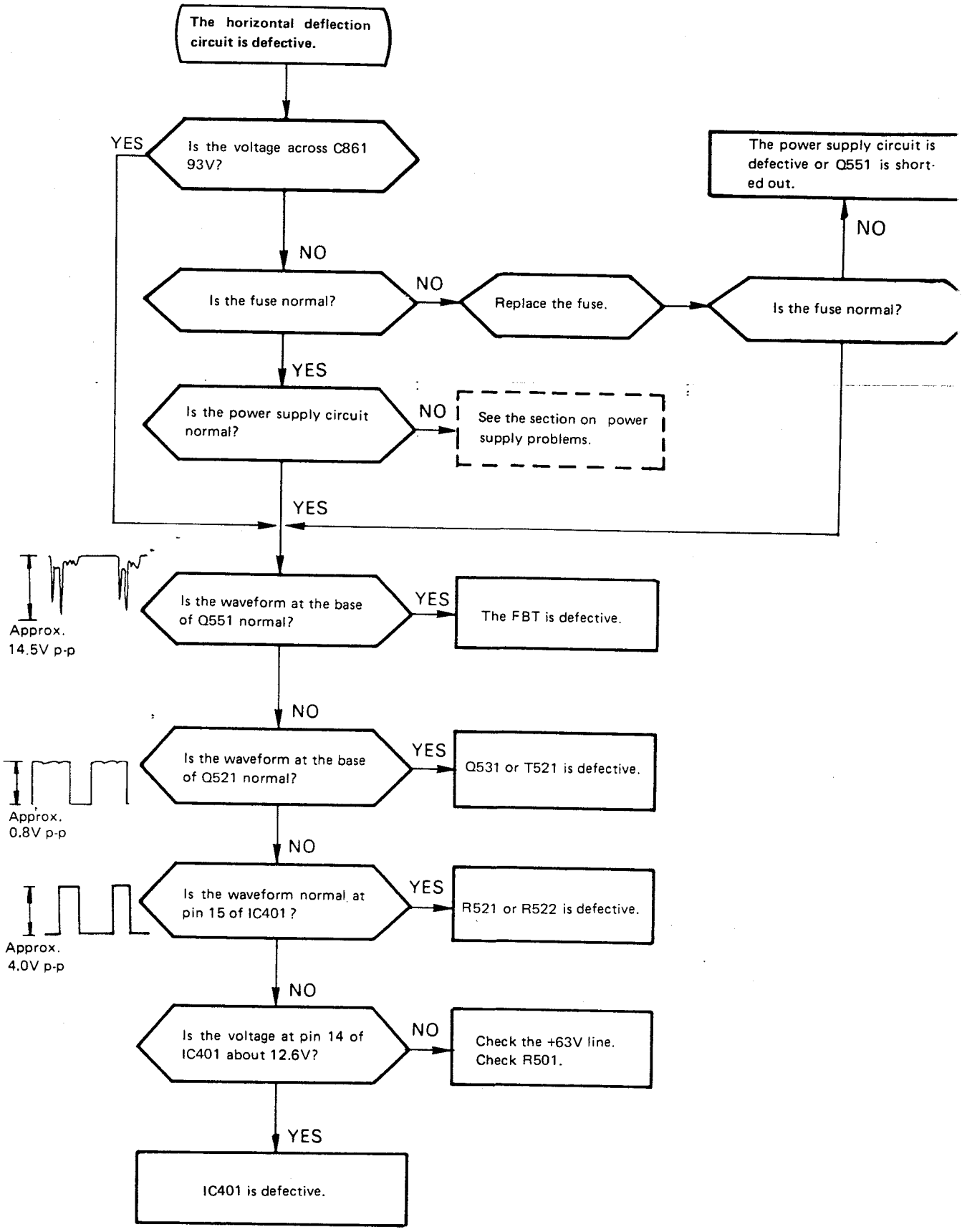


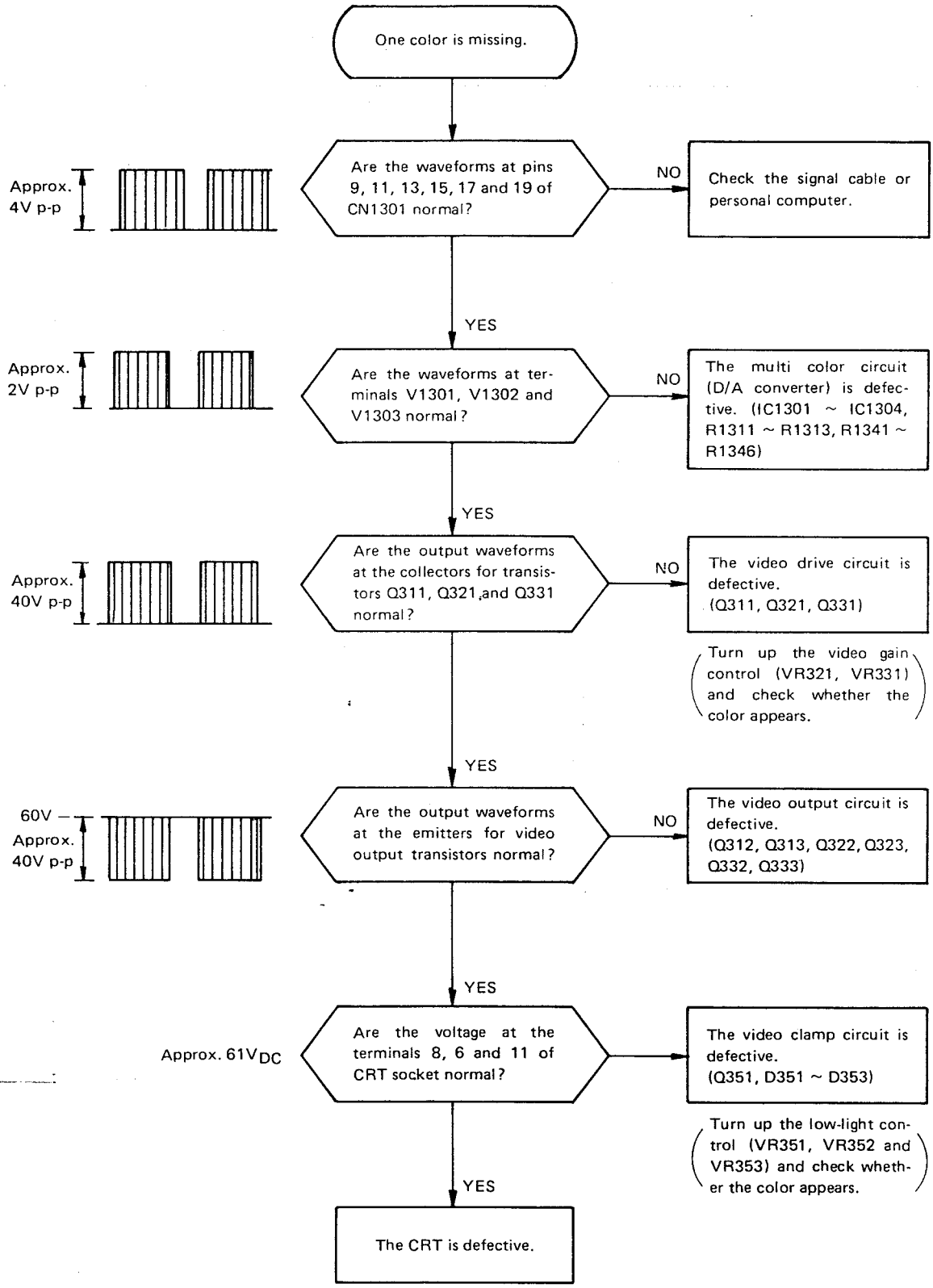
TX-1425FHB
TX-1425FHD

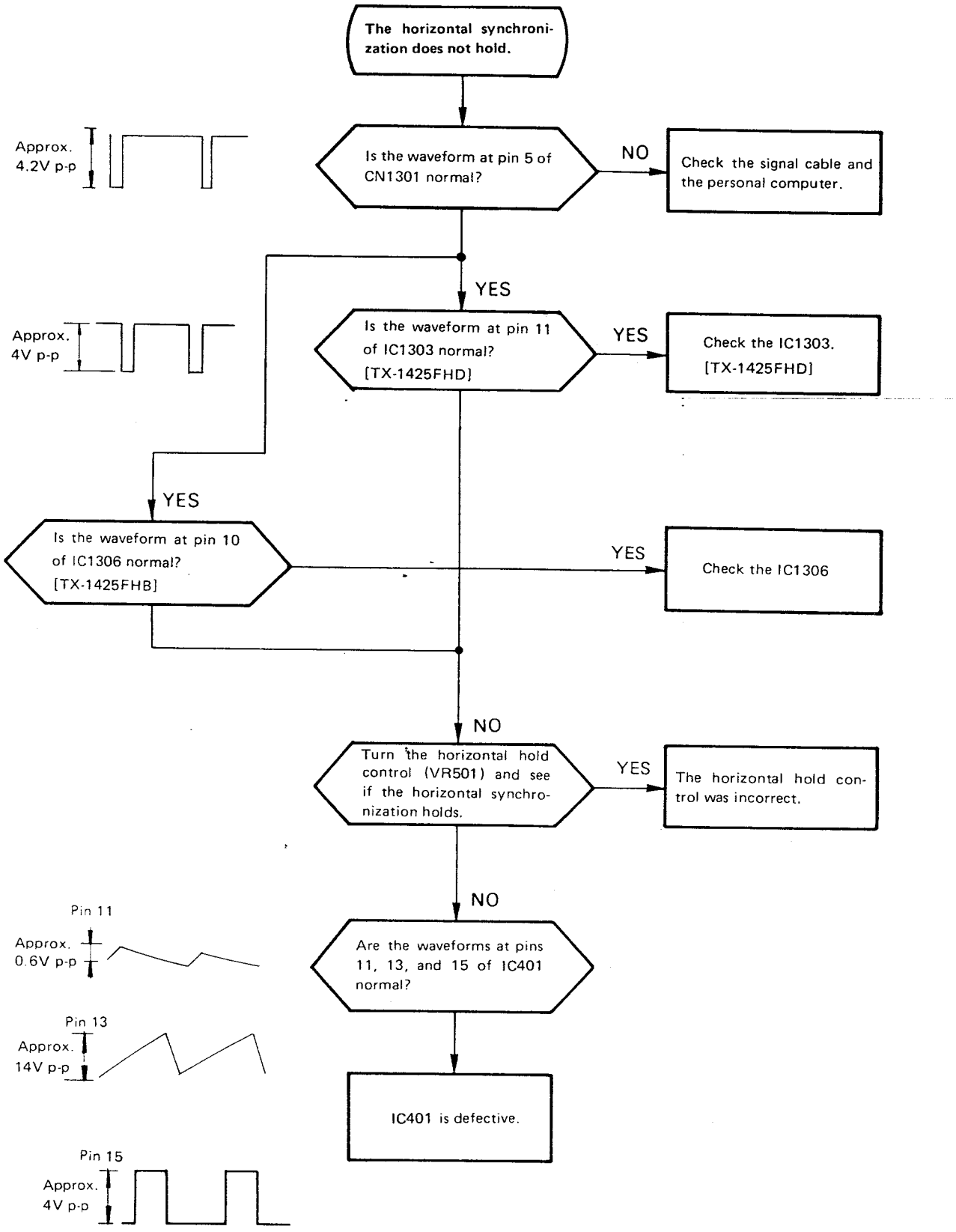
TROUBLESHOOTING HINTS






The horizontal deflection circuit is defective.
Is the voltage across C861 93V?
YES
NO
Is the fuse normal?
NO
Replace the fuse.
Is the fuse normal?
NO
The power supply circuit is defective or Q551 is shorted out.
YES
Is the power supply circuit normal?
NO
See the section on power supply problems.
YES
YES
Approx. 14.5V p-p
Is the waveform at the base of Q551 normal?
YES
The FBT is defective.
NO
Approx. 0.8V p-p
Is the waveform at the base of Q521 normal?
YES
Q531 or T521 is defective.
NO
Approx. 4.0V p-p
Is the waveform normal at pin 15 of IC401?
YES
R521 or R522 is defective.
NO
Is the voltage at pin 14 of IC401 about 12.6V?
NO
Check the +63V line. Check R501.
YES
IC401 is defective.


One color is missing.
Approx. 4V p-p
Are the waveforms at pins 9, 11, 13, 15, 17 and 19 of CN1301 normal?
NO
Check the signal cable or personal computer.
YES
Approx. 2V p-p
Are the waveforms at terminals V1301, V1302 and V1303 normal?
NO
The multi color circuit (D/A converter) is defective. (IC1301 ~ IC1304, R1311 ~ R1313, R1341 ~ R1346)
YES
Approx. 40V p-p
Are the output waveforms at the collectors for transistors Q311, Q321,and Q331 normal?
NO
The video drive circuit is defective. (Q311, Q321, Q331)
Turn up the video gain control (VR321, VR331) and check whether the color appears.
YES
60V
Approx. 40V p-p
Are the output waveforms at the emitters for video output transistors normal?
NO
The video output circuit is defective. (Q312, Q313, Q322, Q323, Q332, Q333)
YES
Approx. 61VDC
Are the voltage at the terminals 8, 6 and 11 of CRT socket normal?
The video clamp circuit is defective. (Q351, D351 ~ D353)
Turn up the low-light control (VR351, VR352 and VR353) and check whether the color appears.
YES
The CRT is defective.


The horizontal synchronization does not hold.
Is the waveform at pin 5 of CN1301 normal?
NO
Check the signal cable and the personal computer.
YES
Is the waveform at pin 11 of IC1303 normal? [TX-1425FHD]
YES
Check the IC1303. [TX-1425FHD]
YES
Is the waveform at pin 10 of IC1306 normal? [TX-1425FHB]
YES
Check the IC1306
NO
Turn the horizontal hold control (VR501) and see if the horizontal synchronization holds.
YES
The horizontal hold control was incorrect.
NO
Are the waveforms at pins 11, 13, and 15 of IC401 normal?
IC401 is defective.
Approx. 4.2V p-p
Approx. 4V p-p
Pin 11
Approx. 0.6V p-p
Pin 13
Approx. 14V p-p
Pin 15
Approx. 4V p-p

The vertical synchronization does not hold.

Approx. 4.2V p-p

Is the waveform normal at pin 1 of CN1301?

NO → Check the signal cable and the personal computer.

YES

Approx. 3.8V p-p

Is the waveform normal at pin 7 of IC401?

NO → Q1314, R419 or C402A is defective. [TX-1425FHD]

NO → Q1306, R419 or C402A is defective. [TX-1425FHB]

YES

Turn the vertical hold control (VR401) and see if the vertical synchronization holds.

YES → The vertical hold control was incorrect.

YES

Pin 6

Approx. 3.6V p-p

Pin 2

Approx. 2.2V p-p

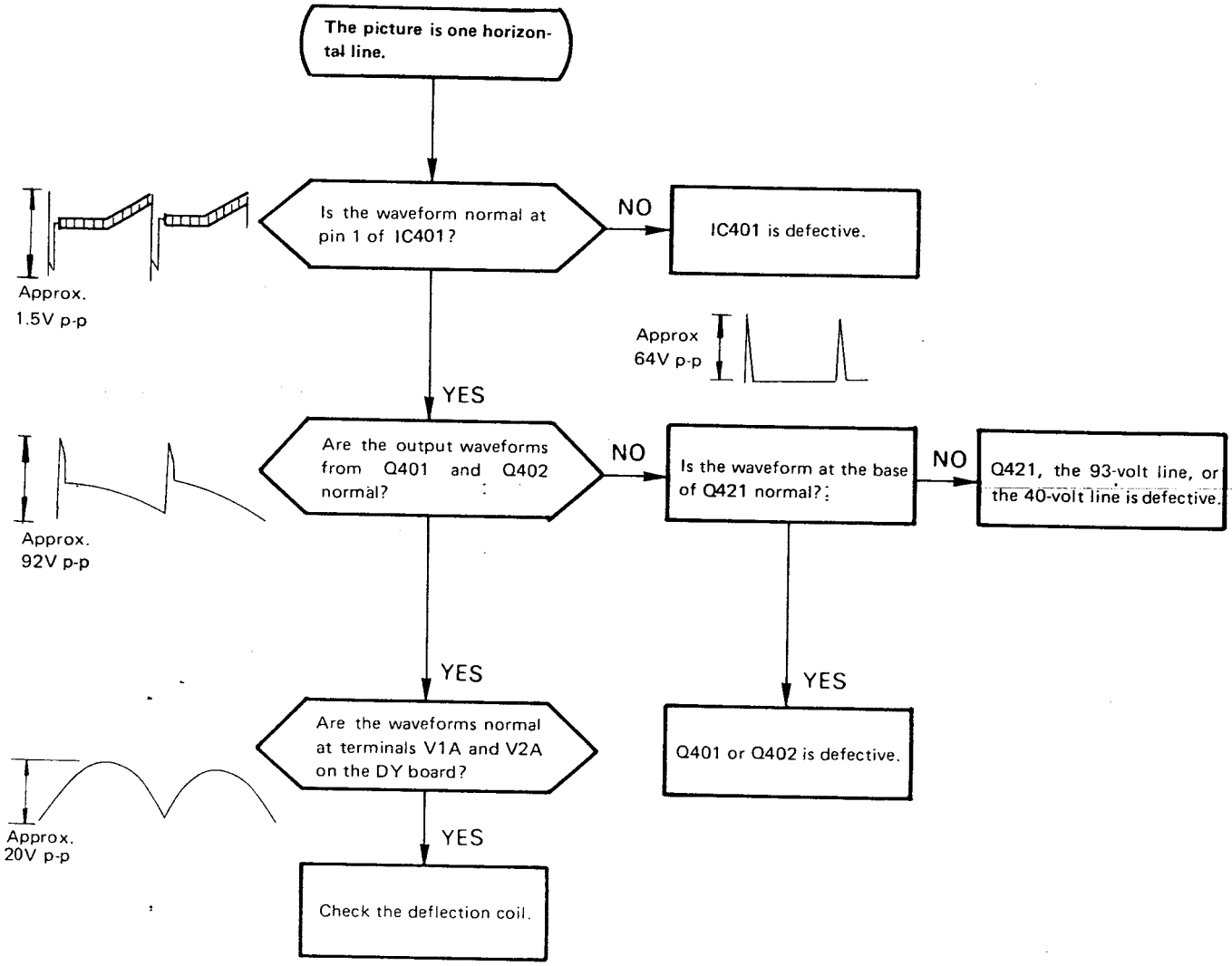
Pin 1

Approx. 1.5V p-p

Are the waveforms normal at pins 6, 2, and 1 of IC401?

NO

IC401 is defective.


The picture is one horizontal line.
Is the waveform normal at pin 1 of IC401?
NO
IC401 is defective.
Approx. 1.5V p-p
Approx 64V p-p
YES
Are the output waveforms from Q401 and Q402 normal?
NO
Is the waveform at the base of Q421 normal?
NO
Q421, the 93-volt line, or the 40-volt line is defective.
Approx. 92V p-p
YES
YES
Are the waveforms normal at terminals V1A and V2A on the DY board?
Q401 or Q402 is defective.
Approx. 20V p-p
YES
Check the deflection coil.

The much side pincushion distortion.

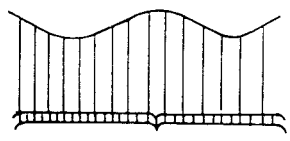
Approx. 11.5V p-p

Is the waveform at the base of Q751 normal?

YES → Check C751, VR751, R752, R753, C752, R754 and C754.

NO

Approx. 64V p-p



Is the waveform at the terminal H1 of T751 normal?

YES → The horizontal deflection circuit is defective.

NO

T751, C555 or Q751 is defective.

The power supply circuit is defective.

Is the voltage at the terminal of T801 about 260V?

NO → The noise filter or the rectifier circuit is defective.

YES

Approx. 310V p-p

Is the waveform at the collector of Q803 normal?

NO → Check Q803, R821A, R821B, R816, C812, and R817.

YES

Check T801, C861, D861, R861, D862, C862, R862, D863, R863, C863, D864, R864, C864 and D865.

ABBREVIATION OF DESCRIPTION

RESISTOR

DESCRIPTION

ALLOWANCE	
F	± 1%
J	± 5%
K	±10%
M	±20%
G	± 2%

Example:

REF. NO.	Panasonic Part No.	Description			
	RESISTORS				
R400	ERDS1FJ151	Carbon	150Ω	J	½W

CAPACITOR

DESCRIPTION

ALLOWANCE	
C	±0.25pF
D	±0.5pF
F	±1pF
J	± 5%
K	±10%
L	±15%
M	±20%
P	±100%–0%
Z	±80%–20%

Example:

REF. NO.	Panasonic Part No.	Description			
	CAPACITORS				
C1006	ECCD1H050CC	Ceramic	5pF	C	50V

NOTE:

In the parts list, parts which have model name indicated in their ( ).

Parts which do not have model name inserted in ( ) are common to Model TX-1425FHB and Model TX-1425FHD.

REPLACEMENT PARTS LIST

Important Safety Notice

Components identified by the International symbol ⚠ have special characteristics important for safety.
When replacing any of these components use only manufacture's specified parts.

REF. NO.		PART NO.	DESCRIPTION
CABINET AND MAIN CHASSIS PARTS			
		TUW85903	Side Plate (R)
		TUW85904	Side Plate (L)
		TUX85881-1	Bottom Plate
		TUX85106	Upper Plate
		TUX85113	CRT Bracket
		TUX85819-3	Side Bracket (R)
		TUX85820-3	Side Bracket (L)
		TUX90019	I/F Bracket
		TUX90020	Filter Bracket
		TUX85121	CRT Bracket
		TUX80701-2	Cord Bracket
		TUC85218	CRT Shield Case
		TKX822001	PC. Board Holder (Big)
		TES201	Spring
		TBM90057	Model Plate (TX-1425FHB)
	⚠	TBM90033	Model Plate (TX-1425FHD)
		TMM1459	Clip
		TMM81416	Cord Band
		TMM81417	Cord Band (Long)
		TMM85423	Clamper
	⚠	TMM85511	Rubber (ITC)
		TMM81460	Rubber
		TMM1455	Beads Band
		TMM85411	Edge Barrier
		TMK84549	Parmalloy (Big)
		TMK84554	Barrier (DY. PC. Board)
	⚠	370MYB22N	Picture Tube
	⚠	TLY85321D	Deflection Yoke
		TLC2061	Convergence Coil
	⚠	TLK859023A	Degauss Coil
	⚠	TNP85804-33	Main PC Board Ass'y (TX-1425FHB)
	⚠	TNP85804-32	Main PC Board Ass'y (TX-1425FHD)
	⚠	TNP81159-31	Interface PC Board Ass'y (TX-1425FHB)
	⚠	TNP81145-31	Interface PC Board Ass'y (TX-1425FHD)
	⚠	TNP89503-32	Filter PC Board Ass'y
		TSN85511	Magnet
		TXAJTE2P109	2P Connector Ass'y (F12)
VR305		EVH5WAF25B23	Variable Resistor (Bright)
		TPC900391	Outer Carton (TX-1425FHB)
		TPC900171	Outer Carton (TX-1425FHD)
		TXAPD21404ZE	Filler
		TPE814055	Set Cover
		TPD359036	Filler (Pad)
	⚠	TQF83647	Fuse Label
	⚠	TQF81735	GND Mark Label
	⚠	TQF80759	Warning Label
		TQF83825	Serial No. Label
		TQF14875	Label
		XTB4+16F	Screw (CRT)
		XTB4+8F	Screw (I/F)
		XTB4+35BFN	Screw
		XTV3+8F	Screw (1P Terminal)
		XTV3+16F	Screw (PCB Holder)
		XTW3+8L	Screw (PCB)
		XYA4+EF8	Screw (Bracket)
		XYE3+EF8	Screw
		XWC3BFN	Washer (1P Terminal)
		XWG5H17	Washer (CRT)
		XWA5B	Washer (CRT)
		XWS8A	Washer
		XWA4B	Washer
		XNS8	Nut
TNP89503-22			
L852	⚠	TLP85630	Trans.
	⚠	TXAJTA3P864	3P Connector Ass'y
TNP85804-32/33			
INTEGRATED CIRCUITS			
IC401	⚠	TVSHA11423	Integrated Circuit
IC581	⚠	TVSM5223P	Integrated Circuit
TRANSISTORS			
Q311		2SC3611	Transistor
Q312		2SC3526H	Transistor
Q313		2SA11450Y	Transistor
Q321		2SC3611	Transistor
Q322		2SC3526H	Transistor
Q323		2SA11450Y	Transistor
Q331		2SC3611	Transistor
Q332		2SC3526H	Transistor
Q333		2SA11450Y	Transistor
Q351		2SC1573QNC	Transistor
Q421		2SD1264PLB	Transistor
Q521		2SC2653HLB	Transistor
Q751		2DS1266R	Transistor
Q801		2SD639	Transistor
Q802		2SA900R	Transistor
Q804		2SC1383QNC	Transistor

REF. NO.		PART NO.	DESCRIPTION
		DIODES	
D311		MA165	Diode
D312		TVSES1F	Diode
D321		MA165	Diode
D322		TVSES1F	Diode
D332		TVSES1F	Diode
D351		TVSMC931	Diode
D352		TVSMC931	Diode
D353		TVSMC931	Diode
D361		TVS10E2	Diode
D362		TVS10E2	Diode
D401A		MA1051M	Diode
D401B		MA1068M	Diode
D402		MA165	Diode
D403		MA165	Diode
D404		MA165	Diode
D421		TVS10E2	Diode
D422		TVS10E2	Diode
D451		TVS11DQ03C	Diode
D452		TVS11DQ03C	Diode
D453		TVS11DQ03C	Diode
D454		TVS11DQ03C	Diode
D532		MA1200M	Diode
D552N		TVS15DF4	Diode
D571	⚠	TVS10E2	Diode
D572	⚠	MA1051M	Diode
D591		MA162	Diode
D801	⚠	TVS20E10	Diode
D802	⚠	TVS20E10	Diode
D803	⚠	TVS20E10	Diode
D804	⚠	TVS20E10	Diode
D805	⚠	ERPF5B0M120G	Thermistor
D806	⚠	ERTD6FFK160M	Thermistor
D811		MA165	Diode
D812		TVS15DF8	Diode
D813		TVS15DF4	Diode
D814	⚠	MA1068H	Diode
D816		TVS15DF4	Diode
D851		TVS10E2	Diode
D861		TVSRG2ALFB1	Diode
D862	⚠	TVS15DF6	Diode
D863	⚠	TVS15DF4	Diode
D864	⚠	TVS15DF4	Diode
D865		TVSR2MV1	Diode
		COIL & TRANSFORMERS	
L311		TLU4R7K186	Peaking Coil
L321		TLU6R8K186	Peaking Coil
L331		TLU4R7K186	Peaking Coil
L341		TLU180J186	Peaking Coil
L551	⚠	TLH85720	Coil (Width)
L552	⚠	TLH85603	Coil (Lin)
L553		TLT222K266E	Peaking Coil
L801	⚠	TLP85624	Trans.
T521	⚠	TLH15405	Coil
T551		TLF84645D	Flyback Trans.
T751		TLH85715	Coil
T801	⚠	TLP85928D	Trans.

REF. NO.		PART NO.	DESCRIPTION			
		CAPACITORS				
C311		ECCF1H221J	Ceramic	220pF	J	50V
C312		ECQE1105KZ	Polyester	1μF	K	100V
C321		ECCF1H221J	Ceramic	220pF	J	50V
C322		ECQE1105KZ	Polyester	1μF	K	100V
C331		ECCF1H221J	Ceramic	220pF	J	50V
C332		ECQE1105KZ	Polyester	1μF	K	100V
C341		ECEA2AU101	Electrolytic	100μF	–	100V
C351		ECEA2AU010	Electrolytic	1μF	–	100V
C362		ECKD3D122KBN	Ceramic	1200pF	K	2kV
C363		ECEA2CS010	Electrolytic	1μF	–	160V
C364		ECEA2CS100	Electrolytic	10μF	–	160V
C401		ECEA1CU331	Electrolytic	330μF	–	16V
C402A		ECEA1HN010S	Electrolytic	1μF	–	50V
C403		ECQB1H682JZ	Polyester	6800pF	J	50V
C404		ECSF1HE105	Tantalum	1μF	–	50V
C405		ECKD1H152KB2	Ceramic	1500pF	K	50V
C406		ECEA2AU100	Electrolytic	10μF	–	100V
C407		ECEA1EU100	Electrolytic	10μF	–	25V
C408		ECKD1H562KB2	Ceramic	5600pF	K	50V
C409		ECKD2H472KB2	Ceramic	4700pF	K	500V
C410		ECEA1HU331	Electrolytic	330μF	–	50V
C411		ECKD2H102KB2	Ceramic	1000pF	K	500V
C421		ECEA2AU3R3	Electrolytic	3.3μF	–	100V
C501		ECEA25Z3R3	Electrolytic	3.3μF	–	25V
C502		ECQK1682JZ	Polyester	6800pF	J	100V
C503		ECEA1HU010	Electrolytic	1μF	–	50V
C504		ECQP1682JZ	Polypropylene	6800pF	J	100V
C505		ECQB1H123JZ	Polyester	0.012μF	J	50V
C506		ECQB1H822JZ	Polyester	8200pF	J	50V
C507		ECEA1CU100	Electrolytic	10μF	–	16V
C509		ECEA1HU010	Electrolytic	1μF	–	50V
C521		ECKD2H122KB2	Ceramic	1200pF	K	500V
C522		ECKD2H681KB2	Ceramic	680pF	K	500V
C532	⚠	ECQM1H104JZ	Polyester	0.1μF	J	50V
C533		ECKD1H821KB2	Ceramic	820pF	K	50V
C551	⚠	ECWH12H392JS	Polypropylene	3900pF	J	1.2kV
C552A	⚠	ECKC3D271JBN	Ceramic	270pF	J	2kV
C553		ECCD2H-221J	Ceramic	220pF	J	500V
C555		ECWF2H105JZ	Polypropylene	1μF		500V
C571		ECEA1EU221	Electrolytic	220μF	–	25V
C573		ECEA0JU221	Electrolytic	220μF	–	6.3V
C591		ECEA2ES010	Electrolytic	1μF	–	250V
C751		ECEA1EU470	Electrolytic	47μF	–	25V
C752		ECEA1HN2R2S	Electrolytic	2.2μF	–	50V
C754		ECEA1HU2R2	Electrolytic	2.2μF	–	50V
C760		ECEA2CS101	Electrolytic	100μF	–	160V
C801	⚠	ECQU2A473MN	Polypropylene	0.047μF	M	100V
C802	⚠	ECQU2A473MN	Polypropylene	0.047μF	M	100V
C803	⚠	ECKCNS332MFJ	Ceramic	3300pF	M	
C804	⚠	ECKCNS332MFJ	Ceramic	3300pF	M	
C805	⚠	ECKCNS472MFJ	Ceramic	4700pF	M	

EF. NO.		PART NO.	DESCRIPTION			
C806	⚠	ECKCNS472MFJ	Ceramic	4700pF	M	
C807	⚠	ECKCNS472MFJ	Ceramic	4700pF	M	
C808		ECES2DU331	Electrolytic	330μF	–	200V
C809		ECES2DU331	Electrolytic	330μF	–	200V
C811		ECEA16Z47	Electrolytic	47μF	–	16V
C812		ECQV1H564JZ	TF Capacitor	0.56μF	J	50V
C813		ECQM4103KZ	Polyester	0.01μF	K	400V
C814		ECQB1H223JZ	Polyester	0.022μF	J	50V
C815		ECQB1H153JZ	Polyester	0.015μF	J	50V
C816		ECQM1H104JZ	Polyester	0.1μF	J	50V
C817		ECQM1H223JZ	Polyester	0.022μF	J	50V
C831	⚠	ECKCNS472MFJ	Ceramic	4700pF	M	
C832	⚠	ECKCNS472MFJ	Ceramic	4700pF	M	
C861		ECES2CU471	Electrolytic	470μF	–	160V
C862		ECEA2AU100	Electrolytic	10μF	–	100V
C863		ECEA1HU471	Electrolytic	470μF	–	50V
C864		ECEA1AU331	Electrolytic	330μF	–	10V

RESISTORS

R312		ERDS2TJ330	Carbon	33Ω	J	1/4W
R313		ERDS2TJ100	Carbon	10Ω	J	1/4W
R314		ERG2ANJ561	Metal Oxide	560Ω	J	2W
R315		ERG2ANJ561	Metal Oxide	560Ω	J	2W
R316		ERD25FJ101K	Carbon	100Ω	J	1/4W
R317		ERG1ANJ103	Metal Oxide	10kΩ	J	1W
R318		ERD25FJ101K	Carbon	100Ω	J	1/4W
R319		ERDS2TJ122	Carbon	1.2kΩ	J	1/4W
R322		ERDS2TJ330	Carbon	33Ω	J	1/4W
R323		ERDS2TJ100	Carbon	10Ω	J	1/4W
R324		ERG2ANJ561	Metal Oxide	560Ω	J	2W
R325		ERG2ANJ561	Metal Oxide	560Ω	J	2W
R326		ERD25FJ101K	Carbon	100Ω	J	1/4W
R327		ERG1ANJ103	Metal Oxide	10kΩ	J	1W
R328		ERD25FJ101K	Carbon	100Ω	J	1/4W
R329		ERDS2TJ122	Carbon	1.2kΩ	J	1/4W
R332		ERDS2TJ330	Carbon	33Ω	J	1/4W
R333		ERDS2TJ100	Carbon	10Ω	J	1/4W
R334		ERG2ANJ561	Metal Oxide	560Ω	J	2W
R335		ERG2ANJ561	Metal Oxide	560Ω	J	2W
R336		ERD25FJ101K	Carbon	100Ω	J	1/4W
R337		ERG1ANJ103	Metal Oxide	10kΩ	J	1W
R338		ERD25FJ101K	Carbon	100Ω	J	1/4W
R339		ERDS2TJ122	Carbon	1.2kΩ	J	1/4W
R351		ERDS2TJ102	Carbon	1kΩ	J	1/4W
R352		ERDS2TJ102	Carbon	1kΩ	J	1/4W
R353		ERDS2TJ102	Carbon	1kΩ	J	1/4W
R354		ERDS2TJ224	Carbon	220kΩ	J	1/4W
R355		ERDS2TJ224	Carbon	220kΩ	J	1/4W
R356		ERDS2TJ224	Carbon	220kΩ	J	1/4W
R357		ERDS2TJ471	Carbon	470Ω	J	1/4W
R358		ERDS2TJ102	Carbon	1kΩ	J	1/4W
R361		ERD25FJ101K	Carbon	100Ω	J	1/4W
R362		ERD25FJ183K	Carbon	18kΩ	J	1/4W
R363		ERDS2TJ822	Carbon	8.2kΩ	J	1/4W
R368		ERDS2TJ121	Carbon	120Ω	J	1/4W
R401		ERG1ANJ152	Metal Oxide	1.5kΩ	J	1W

REF. NO.		PART NO.	DESCRIPTION			
R402		ERD25FJ332K	Carbon	3.3kΩ	J	1/4W
R403		ERDS2TJ822	Carbon	8.2kΩ	J	1/4W
R404		ERDS2TJ273	Carbon	27kΩ	J	1/4W
R405		ERDS2TJ562	Carbon	5.6kΩ	J	1/4W
R406		ERDS2TJ101	Carbon	100Ω	J	1/4W
R407		ERD25FJ102K	Carbon	1kΩ	J	1/4W
R408		ERD25FJ102K	Carbon	1kΩ	J	1/4W
R409		ERD25FJ100K	Carbon	10Ω	J	1/4W
R410		ERDS2TJ560	Carbon	56Ω	J	1/4W
R411		ERDS2TJ822	Carbon	8.2kΩ	J	1/4W
R412		ERDS2TJ153	Carbon	15kΩ	J	1/4W
R413		ERDS1FJ102	Carbon	1kΩ	J	1/2W
R414		ERDS2TJ153	Carbon	15kΩ	J	1/4W
R415		ERDS1FJ6R8	Carbon	6.8Ω	J	1/2W
R416		ERDS2TJ271	Carbon	270Ω	J	1/4W
R417		ERDS2TJ271	Carbon	270Ω	J	1/4W
R418		ERDS2TJ561	Carbon	560Ω	J	1/4W
R419		ERDS2TJ562	Carbon	5.6kΩ	J	1/4W
R421		ERDS1FJ153	Carbon	15kΩ	J	1/2W
R422		ERDS2TJ102	Carbon	1kΩ	J	1/4W
R431		ERDS2TJ152	Carbon	1.5kΩ	J	1/4W
R432		ERG2ANJ561	Metal Oxide	560Ω	J	2W
R451		ERDS1FJ2R7	Carbon	2.7Ω	J	1/2W
R501		ERG2SJ332	Metal Oxide	3.3kΩ	J	2W
R502		ERDS2TJ102	Carbon	1kΩ	J	1/4W
R503		ERDS2TJ101	Carbon	100Ω	J	1/4W
R504		ERDS2TJ333	Carbon	33kΩ	J	1/4W
R505		ERDS2TJ682	Carbon	6.8kΩ	J	1/4W
R506		ERDS2TJ273	Carbon	27kΩ	J	1/4W
R507		ERDS2TJ682	Carbon	6.8kΩ	J	1/4W
R508		ERDS2TJ273	Carbon	27kΩ	J	1/4W
R509		ERDS2TJ222	Carbon	2.2kΩ	J	1/4W
R521		ERDS2TJ471	Carbon	470Ω	J	1/4W
R522		ERDS2TJ681	Carbon	680Ω	J	1/4W
R524		ERDS2TJ472	Carbon	4.7kΩ	J	1/4W
R532		ERD25FJ681K	Carbon	680Ω	J	1/4W
R533		ERDS2TJ222	Carbon	2.2kΩ	J	1/4W
R551A		ERQ1CKP1R0	Fuse Resistor	1Ω	K	1W
R553		ERDS2TJ151	Carbon	150Ω	J	1/4W
R571B	⚠	ER0S2CKF3832	Metal Oxide	38.3kΩ	F	1/4W
R572	⚠	ER0S2CKF1002	Metal Oxide	10kΩ	F	1/4W
R573		ERDS2TJ103	Carbon	10kΩ	J	1/4W
R574		ERDS2TJ104	Carbon	100kΩ	J	1/4W
R575		ERDS2TJ473	Carbon	47kΩ	J	1/4W
R576		ERDS2TJ153	Carbon	15kΩ	J	1/4W
R577		ERDS2TJ123	Carbon	12kΩ	J	1/4W
R578		ERD25FJ100K	Carbon	10Ω	J	1/4W
R591		ERDS2TJ823	Carbon	82kΩ	J	1/4W
R592		ERDS2TJ274	Carbon	270kΩ	J	1/4W
R752		ERDS2TJ102	Carbon	1kΩ	J	1/4W
R753		ERDS2TJ222	Carbon	2.2kΩ	J	1/4W
R754		ERDS2TJ560	Carbon	56Ω	J	1/4W
R755		ERDS2TJ472	Carbon	4.7kΩ	J	1/4W
R756		ERDS2TJ222	Carbon	2.2kΩ	J	1/4W
R801A		ERF5ZYK3R3	Non Flame	3.3Ω	K	5W
R808		ERD25FJ564K	Carbon	560kΩ	J	1/4W
R809		ERD25FJ564K	Carbon	560kΩ	J	1/4W

REF. NO.		PART NO.	DESCRIPTION			
R811	⚠	ERQ14AJ1R0	Fuse Resistor	1Ω	J	1/4W
R812	⚠	ER0S2CKG2051	Metal Oxide	2.05kΩ	G	1/4W
R813	⚠	ER0S2CKG8250	Metal Oxide	825Ω	G	1/4W
R814		ERDS2TJ471	Carbon	470Ω	J	1/4W
R815		ERDS2TJ101	Carbon	100Ω	J	1/4W
R816		ERG2ANJ101	Metal Oxide	100Ω	J	2W
R817		ERDS2TJ122	Carbon	1.2kΩ	J	1/4W
R818A		ERDS1FJ124	Carbon	120kΩ	J	1/2W
R818B		ERDS1FJ124	Carbon	120kΩ	J	1/2W
R819		ERDS1FJ471	Carbon	470Ω	J	1/2W
R820		ERW12PKR47	Wire Wound	0.47Ω	K	1/2W
R821A		ERDS1FJ274	Carbon	270kΩ	J	1/2W
R821B		ERDS1FJ274	Carbon	270kΩ	J	1/2W
R822		ERDS2TJ821	Carbon	820Ω	J	1/4W
R856		ERDS1FJ330	Carbon	33Ω	J	1/2W
R861	⚠	ERDS1FJ1R0	Carbon	1Ω	J	1/2W
R862	⚠	ERD25FJ1R0K	Carbon	1Ω	J	1/4W
R863		ERD25FJ1R0K	Carbon	1Ω	J	1/4W
R864	⚠	ERQ14AJ1R0	Fuse Resistor	1Ω	J	1/4W

CONTROLS

VR321		EVN4HCA00B32	Variable Resistor (G. Gain)
VR331		EVN4HCA00B32	Variable Resistor (B. Gain)
VR352		EVN4HCA00B13	Variable Resistor (G. Low light)
VR353		EVN4HCA00B13	Variable Resistor (B. Low light)
VR401		EVNK4BA00B53	Variable Resistor (V. Hold)
VR351		EVN4HCA00B13	Variable Resistor (R. Low light)
VR402		EVM4HGA00B52	Variable Resistor (Height)
VR431		EVMK4GA00B14	Variable Resistor (V. Center)
VR451		EVNK4BA00B32	Variable Resistor (AMP)
VR452		EVNK4BA00B32	Variable Resistor (TILT)
VR501		EVN4HCA00B33	Variable Resistor (H. Hold)
VR751		EVN4HCA00B53	Variable Resistor (V. PCC)
VR811	⚠	EVN4HCA00B13	Variable Resistor (AVR)

OTHER PARTS

S311		TGPS152GL	Spark Gap
S321		TGPS152GL	Spark Gap
S331		TQPS152GL	Spark Gap
	⚠	ESD393T	Switch (AC)
V311		TJS848100	Socket
V321		TJS848100	Socket
V331		TJS848100	Socket
CL861		TJE81101	Terminal
CL862		TJE81110	Terminal
FS801		TJC3316	Fuse Holder
FS802		TJC3316	Fuse Holder
RL851	⚠	TSE80830	Switch
TS361		TJS828620	CRT Socket
AC1		TJE80301	Terminal
AC2		TJE80301	Terminal
		2SD1264ALB	Transistor (V-out)
		2SC3212A	Transistor (Power)
		2SD1632RL	Transistor (H-out)
	⚠	TQF87212-1	Fuse Label
		TMM81416	Cord Band

REF. NO.	PART NO.	DESCRIPTION
	TMM85210	CRT Socket Cover
	TUW85304	Switch Bracket
	TUX90039	Switch Bracket
	TXAJTE2P143	2P Connector Ass'y (TX-1425FHB)
	TXAJTE3P882	3P Connector Ass'y (TX-1425FHB)
	TXAJTE8P008	8P Connector Ass'y (TX-1425FHD)
	XBA2C31TR0A	Fuse (AC)
	TXAJTA4P394A	4P Connector Ass'y

TNP81159-31 (TX-1425FHB)

INTEGRATED CIRCUITS

IC851	M74LS123P	Integrated Circuit
IC1301	MB74S00	Integrated Circuit
IC1302	MB74S20	Integrated Circuit
IC1303	MB74S38	Integrated Circuit
IC1304	MB74S38	Integrated Circuit
IC1305	MB74S38	Integrated Circuit
IC1306	DN74LS04	Integrated Circuit

TRANSISTORS

Q851	2SC828AR	Transistor
Q1301	2SC1383QNC	Transistor
Q1302	2SC1846R	Transistor (Q.R)
Q1306	2SC828AR	Transistor

DIODES

D852	MA1051M	Diode
D853	MA150	Diode
D1301	MA1051M	Diode
D1302	MA1051M	Diode
D1303	MA1051M	Diode
D1304	MA1051M	Diode
D1307	MA150	Diode
D1308	MA1056M	Diode
D1309	MA150	Diode
D1361	MA1051M	Diode
D1371	MA1051M	Diode

CAPACITORS

C851	ECQB1H103JZ	Polyester	0.01μF	J	50V
C852	ECEA0JU331	Electrolytic	330μF	–	6.3V
C853	ECEA0JU331	Electrolytic	330μF	–	6.3V
C854	ECEA0JU331	Electrolytic	330μF	–	6.3V
C855	ECEA1AU331	Electrolytic	330μF	–	10V
C1301	ECEA1CU331	Electrolytic	330μF	–	16V
C1302	ECEA1AU101	Electrolytic	100μF	–	10V
C1303	ECEA1CU100	Electrolytic	10μF	–	16V
C1304	ECEA1AU101	Electrolytic	100μF	–	10V
C1305	ECKF1H103ZF	Ceramic	0.01μF	Z	50V
C1306	ECKF1H103ZF	Ceramic	0.01μF	Z	50V
C1307	ECKF1H103ZF	Ceramic	0.01μF	Z	50V
C1321	ECQV1H563JZ	TF Capacitor	0.056μF	J	50V

REF. NO.	PART NO.	DESCRIPTION			
RESISTORS					
R851	ERD25FJ332K	Carbon	3.3kΩ	J	1/4W
R852	ERD25FJ562K	Carbon	5.6kΩ	J	1/4W
R854	ERD25FJ273K	Carbon	27kΩ	J	1/4W
R855	ERD25FJ472K	Carbon	4.7kΩ	J	1/4W
R857	ERD25FJ151K	Carbon	150Ω	J	1/4W
R1301	ERD25FJ471K	Carbon	470Ω	J	1/4W
R1302	ERD25FJ471K	Carbon	470Ω	J	1/4W
R1303	ERD25FJ471K	Carbon	470Ω	J	1/4W
R1304	ERD25FJ471K	Carbon	470Ω	J	1/4W
R1307	ERD25FJ331K	Carbon	330Ω	J	1/4W
R1308	ERD25FJ331K	Carbon	330Ω	J	1/4W
R1309	ERD25FJ331K	Carbon	330Ω	J	1/4W
R1310	ERD25FJ331K	Carbon	330Ω	J	1/4W
R1313	ERD25FJ101K	Carbon	100Ω	J	1/4W
R1314	ERD25FJ821K	Carbon	820Ω	J	1/4W
R1315	ERD25FJ271K	Carbon	270Ω	J	1/4W
R1316	ERD25FJ221K	Carbon	220Ω	J	1/4W
R1321	ERD25FJ390K	Carbon	39Ω	J	1/4W
R1322	ERD25FJ820K	Carbon	82Ω	J	1/4W
R1323	ERD25FJ221K	Carbon	220Ω	J	1/4W
R1324	ERD25FJ471K	Carbon	470Ω	J	1/4W
R1331	ERD25FJ390K	Carbon	39Ω	J	1/4W
R1332	ERD25FJ820K	Carbon	82Ω	J	1/4W
R1333	ERD25FJ221K	Carbon	220Ω	J	1/4W
R1334	ERD25FJ471K	Carbon	470Ω	J	1/4W
R1335	ERD25FJ151K	Carbon	150Ω	J	1/4W
R1341	ERD25FJ390K	Carbon	39Ω	J	1/4W
R1342	ERD25FJ820K	Carbon	82Ω	J	1/4W
R1343	ERD25FJ221K	Carbon	220Ω	J	1/4W
R1344	ERD25FJ471K	Carbon	470Ω	J	1/4W
R1350	ERG1ANJ270	Metal Oxide	27Ω	J	1W
R1352	ERD25FJ102K	Carbon	1kΩ	J	1/4W
R1353	ERD25FJ102K	Carbon	1kΩ	J	1/4W
R1361	ERD25FJ682K	Carbon	6.8kΩ	J	1/4W
R1362	ERD25FJ472K	Carbon	4.7kΩ	J	1/4W
R1363	ERD25FJ102K	Carbon	1kΩ	J	1/4W
R1364	ERD25FJ332K	Carbon	3.3kΩ	J	1/4W
R1371	ERD25FJ682K	Carbon	6.8kΩ	J	1/4W
R1372	ERD25FJ472K	Carbon	4.7kΩ	J	1/4W
R1373	ERD25FJ102K	Carbon	1kΩ	J	1/4W
CONTROL					
VR1301	EVM4HGA00B13	Variable Resistor (Sub Bright)			
OTHER PARTS					
F1	TJS878202	2P Socket			
F2	TJS878202	2P Socket			
F6	TJS878203	3P Socket			
F7	TJS828370	20P Socket			
G2	TWH892036	Cable (36cm)			
R2	TWH892036	Cable (36cm)			

REF. NO.	PART NO.	DESCRIPTION			
TNP81145-31 (TX-1425FHD)					
INTEGRATED CIRCUITS					
IC851	M74LS123P	Integrated Circuit			
IC1301	MB74S00	Integrated Circuit			
IC1302	MB74S38	Integrated Circuit			
IC1303	MB74S00	Integrated Circuit			
IC1304	MB74S38	Integrated Circuit			
IC1305	MB74S38	Integrated Circuit			
TRANSISTORS					
Q851	2SD639	Transistor			
Q1311	2SC1383QNC	Transistor			
Q1312	2SC1846R	Transistor (Q.R)			
Q1314	2SD639	Transistor			
DIODES					
D852	MA1051M	Diode			
D853	MA150	Diode			
D1301	MA1051M	Diode			
D1302	MA1051M	Diode			
D1303	MA1051M	Diode			
D1311	MA150	Diode			
D1312	MA1056M	Diode			
D1313	TVS11DQ03C	Diode			
D1321	MA1051M	Diode			
D1322	MA1051M	Diode			
D1323	MA1051M	Diode			
D1351	MA1051M	Diode			
D1352	MA1051M	Diode			
D1353	MA150	Diode			
CAPACITORS					
C851	ECQB1H103JZ	Polyester	0.01μF	J	50V
C852	ECEA0JU331	Electrolytic	330μF	–	6.3V
C853	ECEA0JU331	Electrolytic	330μF	–	6.3V
C854	ECEA0JU331	Electrolytic	330μF	–	6.3V
C857	ECEA1AU331	Electrolytic	330μF	–	10V
C1301	ECKF1H103ZF	Ceramic	0.01μF	Z	50V
C1302	ECKF1H103ZF	Ceramic	0.01μF	Z	50V
C1303	ECKF1H103ZF	Ceramic	0.01μF	Z	50V
C1304	ECKF1H103ZF	Ceramic	0.01μF	Z	50V
C1305	ECKF1H103ZF	Ceramic	0.01μF	Z	50V
C1311	ECEA0JU101	Electrolytic	100μF	–	6.3V
RESISTORS					
R851	ERD25FJ332K	Carbon	3.3kΩ	J	1/4W
R852	ERD25FJ562K	Carbon	5.6kΩ	J	1/4W
R854	ERD25FJ273K	Carbon	27kΩ	J	1/4W
R855	ERD25FJ472K	Carbon	4.7kΩ	J	1/4W
R857	ERD25FJ151K	Carbon	150Ω	J	1/4W
R1301	ERD25FJ331K	Carbon	330Ω	J	1/4W

REF. NO.	PART NO.	DESCRIPTION
R1302	ERD25FJ471K	Carbon 470Ω J 1/4W
R1303	ERD25FJ331K	Carbon 330Ω J 1/4W
R1304	ERD25FJ471K	Carbon 470Ω J 1/4W
R1305	ERD25FJ331K	Carbon 330Ω J 1/4W
R1306	ERD25FJ471K	Carbon 470Ω J 1/4W
R1307	ERD25FJ331K	Carbon 330Ω J 1/4W
R1311	ERDS1FJ121	Carbon 120Ω J 1/2W
R1312	ERDS1FJ121	Carbon 120Ω J 1/2W
R1313	ERDS1FJ121	Carbon 120Ω J 1/2W
R1314	ERD25FJ221K	Carbon 220Ω J 1/4W
R1315	ERD25FJ821K	Carbon 820Ω J 1/4W
R1316	ERD25FJ271K	Carbon 270Ω J 1/4W
R1317A	ERDS1FJ560	Carbon 56Ω J 1/2W
R1317B	ERDS1FJ560	Carbon 56Ω J 1/2W
R1318	ERD25FJ101K	Carbon 100Ω J 1/4W
R1321	ERD25FJ331K	Carbon 330Ω J 1/4W
R1322	ERD25FJ471K	Carbon 470Ω J 1/4W
R1323	ERD25FJ331K	Carbon 330Ω J 1/4W
R1324	ERD25FJ471K	Carbon 470Ω J 1/4W
R1325	ERD25FJ331K	Carbon 330Ω J 1/4W
R1326	ERD25FJ471K	Carbon 470Ω J 1/4W
R1341	ERD25FJ271K	Carbon 270Ω J 1/4W
R1342	ERD25FJ271K	Carbon 270Ω J 1/4W
R1343	ERD25FJ271K	Carbon 270Ω J 1/4W
R1344	ERD25FJ151K	Carbon 150Ω J 1/4W

REF. NO.	PART NO.	DESCRIPTION
R1345	ERD25FJ151K	Carbon 150Ω J 1/4
R1346	ERD25FJ151K	Carbon 150Ω J 1/4
R1351	ERD25FJ472K	Carbon 4.7kΩ J 1/4
R1352	ERD25FJ682K	Carbon 6.8kΩ J 1/4
R1353	ERD25FJ472K	Carbon 4.7kΩ J 1/4
R1354	ERD25FJ682K	Carbon 6.8kΩ J 1/4
R1356	ERD25FJ102K	Carbon 1kΩ J 1/4
R1357	ERD25FJ102K	Carbon 1kΩ J 1/4

CONTROL

VR1311	EVN4HCA00B13	Variable Resistor (Sub Bright)

OTHER PARTS

CN1301	TJS828370	Socket
CN1302	TJS878208	8P Socket
CN1303	TJS878202	2P Socket
V1301	TWH892026	Cable (RF) (26)
V1302	TWH892029	Cable (RF) (29)
V1303	TWH892037	Cable (RF) (37)